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CATALOGUE

OF THE

ECHINODERMATA

IN THE

AUSTRALIAN MUSEUM.

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BY

E. P. RAMSAY,

F.R.S.E., F.L.S., M.R.I.A., F.G.S., F.R.G.S., C.M.Z.S.
FELLOW OF THE IMP. ROYAL ZOOLOGO-BOTANIK SOC., VIENNA.
HON. MEMB. ROYAL SOC., TASMANIA.
&c., &c.

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PART I.

ECHINI.

DESMOSTICHA AND PETALOSTICHA.

PRINTED BY ORDER OF THE TRUSTEES.

E. P. RAMSAY, CURATOR.

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Sydney:
F. W. WHITE, PRINTER, 39 MARKET STREET, WEST

1885.

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Hon. Memb. Royal Soc., Tasmania.
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PREFACE.

THE object of this Catalogue is to (1) give a list of the *Echin* in the Museum Collection; (2) to record correct habitats of the Australian species and the localities of such as have been met with by our Collectors, thereby showing the distribution of fauna; and lastly (3) to point out our deficiencies, in the hope that our friends in other countries may feel inclined to fill up some of the numerous gaps by donations or offers of exchange.

I take the present opportunity, on behalf of the Trustees of the Australian Museum, to offer our best thanks to CAPTAIN HIXSON, R.N., President of the Marine Board of New South Wales, for the interest he has shown in our work, in so liberally placing at our disposal a steam launch for dredging purposes, by which means the museum has been lately so greatly enriched in the Marine Fauna of Port Jackson, not only in the Crustacea, Echinodermata, and Cœlenterata, but also in many orders and families of Marine Vertebrates and Invertebrates; also to DR. JULIUS VON HAAST, PROFESSORS PARKER and HUTTON, of New Zealand, and other friends of the Institution, who have from time to time presented specimens.

The nomenclature, synonymy, and arrangement has been compiled chiefly from two of A. AGASSIZ's great works, the "Revision of the Echini," and the "Report of the Voyage of the Challenger," with occasional reference to the "*Catalogue Raisonné des Echinides*" of LOUIS AGASSIZ and DESOR, in the *Annales des Sciences Naturelles*, and to PROFESSOR F. JEFFREY BELL's account of the Echinodermata collected by DR. COPPINGER during the Voyage of H. M. S. "Alert." These works are here quoted respectively as the "Revision of the Echini" *(Rev. Ech.)*; the "Voyage of the Challenger" *(Voy. Chall.)*; "Voyage of the Alert" *(Voy. Alert)*; and "Catalogue Raisonné des Echinides;" "C. R. Ech. Ann. Sc. Nat." Occasional reference is also made to DR. GRAY's "Catalogue of the Echinodermata in the British Museum," and to PROFESSOR DUNCAN's and PROFESSOR BELL's papers in the "Proceedings and Journal of the Zoological and Linnean Societies of London." All the above-mentioned being in the Museum Library, are of easy access to any one desirous of studying the subject, or for reference.

The *Echinoidea*, which unfortunately is the smallest part of our collection of Echinodermata, is but poorly represented in Australia; nevertheless, the Australian Region is the stronghold of some of the genera, as *Salmacis*, *Amblypneustes*, *Goniocidaris*, and *Phyllacanthus*, of which last all the known species are found within the Australian waters. Of the family Goniocidaridæ, out of fifteen species recorded by Professor A. Agassiz, ten are found in the Australian Region. The Echinometridæ of Gray are also strongly represented by the occurrence of seven out of the eight genera known; of the family *Temnopleuridæ* (Des.), the genera *Temnopleurus* (Agass.), *Salmacis* (Agass.), *Mespilia* (Des.), *Amblypneustes* (Agass.), and *Holopneustes* (Agass.), are Australian.

The *Clypeastridæ* (Agass.) are not well represented, for out of about eighteen genera only eight are to be found, represented by fourteen out of about fifty species known. One genus, *Anomalanthus*, the locality of which is yet uncertain, is the only genus peculiar to the Australian Region, *i.e.*, taking the *Peronella* of Gray to be not distinct from *Laganum*.

Of the *Petalosticha*, probably only three genera, *Eupatagus*, *Lovenia*, and *Breynia* may be considered as being peculiar to the Australian Seas.

The *Asteroidea*, *Ophiuroidea*, *Crinoidea*, and *Holothuroidea* will form the subject of other parts of this Catalogue, to be published as determined hereafter.

Appended will be found a few notes and remarks on the Australian species, which may not prove uninteresting to the general reader.

I have only to add that the abbreviation "Pres." signifies Presented; "Bght.," Purchased; "Coll.," Collected by the Museum Collectors or Employees; "Exch," received in Exchange; while "O.C." is used to indicate that the specimen is from the Old Collection in the Museum prior to 1870.

Throughout the Catalogue will be found mentioned some of the genera and species which we are most desirous of obtaining, these and any others not enumerated will be welcome additions to the Collection, and in return for which we shall be very happy to send duplicates of Australian species.

E. P. RAMSAY.

ECHINOIDEA.

DESMOSTICHA.

Sub-Order Desmosticha, *Haeckel, Entwickel Gesch.*, 1866 *(emend)*.

CIDARIDÆ.

Family Cidaridæ, *Müller, Bau d. Echinod.*, 1854 *(emend)*.

GONIOCIDARIDÆ.

Sub-Family Goniocidarida, *Haeckel, Entwick. Gesch.*, 1866; *Agass., Rev. Ech., Pt.* iii., *p.* 384.

CIDARIS.

Cidaris, *Klein*, 1734, *Nat. Disp. Ech.; A. Agass., Voy. Chall.*, iii., *p.* 33.

Cidaris metularia.

Cidaris metularia, *Blainv.; A. Agass., Rev. Ech., Pt.* iii., *p.* 385.

(*a*) Mauritius - - - - - - - Bght.

Hab. Mauritius; Sandwich Islands; Fiji; East India Islands.

Cidaris tribuloides.

Cidarites tribuloides, *Lamk.*, 1816, *Anim. sans Vert.*

Cidaris tribuloides, *Blainv.*, 1830, *Zooph.; A. Agass., Rev. Ech., Pt.* iii., *p.* 386.

(*a*) Florida - - - - - - - Exch.

(*b*) Dredged off Coast of Spain - - - - Pres.

Hab. Brazil; Cape Palmas, &c.

DOROCIDARIS.

Dorocidaris, *A. Agass.*, 1869, *Bull. Mus. Comp. Zool.*, *Vol.* i.; *Rev. Ech.*, *Pt.* iii., *p.* 386.

Dorocidaris neapolitana.

(*a*) Mediterranean - - - - - - Bght.

Hab. Mediterranean.

Dorocidaris papillata.

Cidaris papillata, *Leske*, 1778, *Kl. Add.*

Dorocidaris papillata, *A. Agass.*, 1869, *Bull. Mus. Comp. Zool.*, *Vol.* i.; *Rev. Ech.*, *Pt.* iii., *p.* 386.

(*a*) - - - - - - - - - - Pres.

Hab. Mediterranean; Norway; Florida.

PHYLLACANTHUS.

Phyllacanthus, *Brandt*, *Proc. Desc. An.*, 1835.

Phyllacanthus imperialis.

Cidarites imperialis, *Lamk.*, 1816, *Anim. sans Vert.*; *A. Agass.*, *Rev. Ech.*, *Pt.* iii., *p.* 391.

(*a*) Mauritius - - - - - - - O.C.

Hab. Mauritius; Red Sea; East Indies, Australia.

Phyllacanthus annulifera.

Cidarites annulifera, *Lamk.*, 1816, *Anim. sans Vert.*

Phyllacanthus annulifera, *A. Agass.*, *Rev. Ech.*, *Pt.* i., *p.* 150; *id. Pt.* iii., *p.* 387; *Bell*, *Voy. Alert*, *p.* 118, 1884.

(*a to f, &c.*) Port Denison, 5 to 10 faths. - - Dredged.
(*g to j, &c.*) Port Denison, denuded tests - - „
(*k to m*) Cossack, West Australia - - - Bght.
(*n to p*) „ „ denuded tests „

Hab. Solomon Islands; North-East, West, and North Coasts of Australia.

Phyllacanthus baculosa.

Cidarites baculosa, *Lamk. Anim. sans Vert.*, 1816.

Phyllacanthus baculosa, *A. Agass., Rev. Ech., Pt.* iii., *p.* 388.

(*a, b*) Mauritius - - - - - - Bght.

Hab. Mauritius; Coasts of East Africa; Red Sea.

Phyllacanthus australis, *sp. nov.*

(*a*) { Port Jackson, dredged near S. Reef, 6 faths. / Type of the Species - - - - - } Coll.

Hab. Port Jackson.

Phyllacanthus dubia.

Phyllacanthus dubia, *Br.*, 1835, *Prod. Descr. An.; A. Agass., Rev. Ech., Pt.* iii., *p.* 389.

(*a*) Port Darwin - - - - - - Coll.
(*b*) Mauritius - - - - - - - Exch.

Hab. South Africa; North Australia.*

Phyllacanthus parvispinis.

Phyllacanthus parvispinis, *T.-Woods, P. L. Soc. of N.S.W.*, iv., *p.* 286, 1880.

(*a*) Type of the species, Port Jackson.
(*b*) Type of the species, denuded test, Port Jackson.
(*c to f*) Port Jackson, very large specimens.
(*g*) Port Jackson, form approaching *P. dubia.*

Hab. Port Jackson, East Coasts of Australia.

MARINE BIOLOGICAL LABORATORY WOODS HOLL LIBRARY MASS.

STEPHANOCIDARIS.

Stephanocidaris, *A. Agass., Rev. Ech.*, iii., *p.* 393.
(Not represented.)

Hab. Australia, &c.

*The common Port Jackson species usually known to Australian Naturalists as *P. dubia*, has been recently separated by Tenison-Woods as *P. parvispinis.*

POROCIDARIS.

Porocidaris, *Des.* 1854, *Syn. Ech. foss.*, *p.* 46; *A. Agass.*, *Rev. Ech.*, iii., *p.* 394–5.

(Not represented.)

GONIOCIDARIS.

Goniocidaris, *Desor*, 1846, *Agass.*, *Cat. Rais.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 395.

Goniocidaris tubaria.

Cidarites tubaria, *Lamk.*, *Anim. sans Vert.*, *p.* 57, 1816.

Goniocidaris tubaria, *Lütk.*, 1864, *Bid. til. kund. om Ech.*; *A. Agass.*, 1873, *Rev. Ech.*, *Pt.* iii., *p.* 397; *id. Voy. Chall. Zool.*, *Vol.* iii., *p.* 49, 1881.

(*a to f*) Port Jackson, South Reef, 5 to 8 faths. Coll.
(*g*, *h*, *&c.*) Denuded tests, Port Jackson - - ,,

Hab. Port Jackson; South and East Coasts of Australia.

Goniocidaris geranioides.

Cidarites geranioides, *Lamk.*, 1816, *An. sans Vert.*
Goniocidaris geranioides, *Agass.*, *Cat. Rais.*, 1846.

(*a*, *b*) Port Phillip - - - - - - Pres.

Hab. South-East and South Coast of Australia; Tasmania.

SALENIDÆ.

Salenidæ, *Agass.*, 1838, *Mon. Ech. Salénies (emend.)*; *A. Agass.*, *Voy. Chall. Zool.*, iii., *p.* 50.

(Not represented.)

ARBACIADÆ.

Arbaciadæ, *Gray*, *P. Z. S.*, *Lond.*, 1855, *p.* 36; *A. Agass.*, *Rev. Ech*, iii., *p.* 399.

ARBACIA.

Arbacia, *Gray*, *P. Z. S.*, *Lond.*, 1855, *p.* 36; *id. l. c.*, 1835, *p.* 58.

Arbacia punctulata.

Arbacia punctulata, *Gray, P. Z. S., Lond.*, 1835, *p.* 58.

Echinus punctulatus, *Lamk., An. sans Vert.*, 1816.

(*a*) "Wood Hole" Mass. - - - - - Exch.
(*b to e*) "Vineyard Snd. Mass." - - - „
(*f*) „ „ - - - „
(*g*) „ „ denuded test - „

Hab. Florida Reefs, &c.

Arbacia spatuligera.

Echinus spatuligera, *Val.* 1846, *Voy. Vénus.*

Arbacia spatuligera, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 93; *id.* iii., *p.* 403–4.

(*a, b*) Denuded tests, Chili - - - - Exch.

Hab. Chili; Peru; California.

PODOCIDARIS.

Podocidaris, *A. Agass.*, 1869, *Bull. M. C. Z.*, i.; *Rev. Ech.*, iii., *p.* 405.

(Not represented.)

COELOPLEURUS.

Coelopleurus, *Agass., Cat. Syst. Ectyp.*, 1840; *A. Agass., Voy. Chall. Zool.*, iii., *p.* 61, 1881; *Rev. Ech.*, iii., *p.* 406.

(Not represented.)

DIADEMATIDÆ.

Diadematidæ, *Peters, Monatsb. Akad. Berl.*, 1853 *(emend.); A. Agass., Rev. Ech.*, iii., *p.* 407.

DIADEMA.

Diadema, *Schynv.*, 1711, *Thes. Imag. (Pet. emend.); A. Agass., Rev. Ech.*, iii., *p.* 408.

Diadema setosum.

Cidarites diadema, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 58.

Diadema setosa, *Gray*, 1825, *Ann. Phil.*, *p.* 4.

Diadema setosum, *A. Agass.*, *Rev. Echin.*, iii., *p* 408.

(*a*) New Caledonia - - - - - - Pres.
(*b to g*) Ugi, Solomon Islands - - - - Coll.
(*h*, *i*) Ugi, Solomon Islands, denuded tests - „

Hab. South Pacific; West India; Philippine and Cape Verde Islands; Japan and China Seas; East and North Coasts of Australia, north of Wide Bay.

CENTROSTEPHANUS.

Centrostephanus, *Peters, Denksch. Akad. Berlin*, 1855; *A. Agass.*, *Rev. Ech.*, iii., *p.* 409.

Centrostephanus rodgersii.

Thrichodiadema Rodgersii, *A. Ag.*, 1863, *Proc. Acad. N. S. Phila.*, *p.* 354.

Centrostephanus Rodgersii, *A. Ag.*, 1872, *Rev. Ech.*, *Pt.* i., *p.* 98; *id. l. c.*, iii., *p.* 412.

(*a to d*) Long Bay, near Botany Heads - - Coll.
(*e*, *f*) „ „ denuded tests „
(*g to j*) Young, dredged in 5 faths., Port Jackson „

Hab. East and South Coasts of Australia; (New Caledonia?).

ECHINOTHRIX.

Echinothrix, *Peters, Monatsb. Akad. Berlin*, 1853.

Echinothrix calamaris.

Echinus calamaris, *Pall.*, 1774, *Spic. Zool.*

Echinothrix calamaris, *A. Agass.*, 1872, *Rev. Ech.*, *Pt.* i., *p.* 120; *id. l. c.*, *Pt.* iii., *p.* 413; *id. Voy. Chall.*, iii., *p.* 67, 1881.

(*a*) Ugi, Solomon Islands - - - - - Coll.

Hab. Society Islands; East India Islands; Philippines; Fiji; New Hebrides and North Coasts of New Guinea; North Australia.

Echinothrix turcarum.

Diadema turcarum, *Schynv. Thes. Imag.*, 1711.

Echinothrix turcarum, *Peters*, 1853, *Monatsb. Acad., Berlin*, *p.* 484; *A. Agass., Rev. Ech.*, iii., *p.* 416; *id. Voy. Chall.*, iii., *p.* 67.

(*a*) Sandwich Island - - - - - - Exch.

Hab. Sandwich and Fiji Islands, Honolulu; East India Islands; Chinese and Japanese Seas; East Coast of Africa; Red Sea.

Echinothrix desorii.

Echinothrix desorii, *Peters*, 1853, *Monatsb. Akad., Berlin*, *p.* 484; *A. Agass., Rev. Ech.*, iii., *p.* 415; *id. Pt.* i., *p.* 120.

Astropyga desorii, *Agass.*, 1846, *C. R. Ann. Sc. Nat.*, vi.

(*a*) Mauritius - - - - - - - Exch.

Hab. Fiji Islands; Mauritius; Red Sea; Sandwich Islands.

ASTROPYGA.

Astropyga, *Gray*, 1825, *Ann. Phil.*

Astropyga pulvinata.

Cidarites pulvinata, *Lamk. Ann. sans Vert.*, 1816.

Astropyga pulvinata, *Agass., C. R. Ann. Sc. Nat.*, vi., 1846; *A. Agass., Rev. Ech.*, iii., *p.* 418; *id. Voy. Chall.*, iii., *p.* 70.

(*a to f*) Mauritius - - - - - - Bght.

Hab. Mauritius; Gulf of California; Panama; Honolulu. (10 to 50 faths.)

ECHINOTHURIDÆ.

Echinothuridæ, *Wyville Thomson*, "*Depths of the Sea*," *p.* 164, 1873; *id. Echinoidea of the* "*Porcupine*," *Trans. Roy. Soc., Vol.* clxiv., *Pt.* 2, *p.* 730; *A. Agass., Voy. Chall.*, iii., *p.* 71, 1881.

ASTHENOSOMA.

Asthenosoma, *Grube*, 1867, *Jahresb. d. Schles. Ges. f. Vat. Cult.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 422; *id. Voy. Chall.*, iii, *p.* 82, 1881.

(Not represented.)

Hab. China Seas.

PHORMOSOMA.

Phormosoma, *Wyville Thomson*, 1874, *Ech. Porcup.*, *Trans. Roy. Soc.*, *Vol.* clxiv., *Pt.* 2, *p.* 732; *A. Agass.*, *Voy. Chall.*, iii., *p.* 91.

(Not represented.)

ECHINOMETRADÆ.

Echinometradæ, *Gray*, *P. Z. S.*, *Lon.*, 1855, *p.* 37; *A. Agass.*, *Rev. Ech.*, iii., *p.* 423.

COLOBOCENTROTUS.

Colobocentrotus, *Brandt*, 1835, *Prod. Des. An.*

Colobocentrotus atratus.

Echinus atratus, *Linn. Syst. Nat.*, 1758.

Colobocentrotus atratus, *Brandt*, *Prod. Des. An.*, 1835; *A. Agass.*, *Rev. Ech.*, iii., *p.* 424.

(*a*, *b*) Mauritius - - - - - - O.C.
(*c*) Half denuded of spines, Mauritius - - „
(*d*, *e*) Sandwich Island - - - - - Exch.

Hab. Mauritius; East Coast of Africa; Java; Sandwich Islands.

HETEROCENTROTUS.

Heterocentrotus, *Brandt*, 1835, *Prod. Des. An.*

Heterocentrotus mammillatus.

Cidaris mammillata, *Klein*, 1734, *Nat. Disp. Ech.*

Heterocentrotus mammillatus, *Brandt*, *Prod. Des. An.*, 1835 ; *A. Agass.*, *Rev. Ech.*, iii., 428.

(*a*) Ugi, Solomon Islands - - - - - Coll.
(*b*, *c*) Ugi, Solomon Islands - - - - „
(*d to g*) Fiji - - - - - - - O.C.
(*h to j*) Fiji, denuded tests - - - - „
(*k to m*) Fiji, partly denuded - - - - „
(*n*) Phœnix Islands - - - - - - Exch.
(*o*) Ellice Islands - - - - - - Pres.

Hab. Red Sea; East India Islands; Mauritius; Fiji; Sandwich, Solomon and New Hebrides Islands.

Heterocentrotus trigonarius.

Echinus Trigonarius, *Lamk.*, 1816, *An. Sans Vert.*

Heterocentrotus trigonarius, *Brandt*, *Prod. Desc. An.*, 1835; *A. Agass.*, *Rev. Ech.*, iii., *p.* 430.

(*a*, *b*) Adult. Mauritius - - - - - Bght.
(*c*, *d*) Young. Mauritius - - - - - „
(*e*) Fiji - - - - - - - - Exch.
(*f*) Fiji (denuded) - - - - - - „

Hab. Mauritius; Java; New Caledonia; Sandwich and Fiji Islands.

ECHINOMETRA.

Echinometra *Rondel*, 1554, *De Piscib. Mar.* (Breyn) ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 431 ; *id. Voy. Chall.*, iii., *p.* 105.

Echinometra lucunter.

Cidaris lucunter, *Leske*, 1778, *Kl. Add.*

Echinometra lucunter, *Blainv.*, 1834, *Actin.*; *A. Agass., Rev. Ech.*, iii., *p.* 431; *id. Voy. Chall.*, iii., *Zool.*, *p.* 105.

(*a to d*) Mauritius. (?) - - - - - O.C.
(*e to j*) Ugi, Solomon Islands - - - - Coll.
(*k, l*) Port Denison - - - - - - „
(*m, &c.*) Fiji, denuded tests. - - - - O.C.
(*n, o*) Mauritius. (?) - - - - - - Exch.
(*p, q*) Samoa and Fiji Islands - - - - „
(*r*) Society Islands - - - - - - „
(*s*) West Australia - - - - - - Bght.

Hab. Solomon, Fiji, Sandwich, and East India Islands; East and West and North-East Coasts of Australia; Japan; East Coast of Africa. (0 to 20 faths.)

Echinometra oblonga.

Echinus oblonga, *Bl. Dict. Sc. Nat. O.*, 1825.

Echinometra oblonga, *Blainv.*, 1834, *Actin.*; *A. Agass., Rev. Ech.*, iii., *p.* 433.

(*a*) Samoa - - - - - - - - Exch.
(*b, c*) Loc. ? Denuded tests - - - - O.C.

Hab. Sandwich, Philippine, New Hebrides and Mitchell's Islands; Solomon Islands, &c.

Echinometra subangularis.

Echinometra michelini, *Desml.*, 1846; *Agass. & Desor, C. R. Ann. Sc. Nat.*, vi., *p.* 373; *A. Agass., Rev. Ech.*, i., *(Syn.) p.* 116.

Cidaris subangularis, *Leske*, 1778, *Kl. Add.*

Echinometra subangularis, *Desml., Syn.*, 1837; *A. Agass., Rev. Ech.*, iii., *p.* 434; *id.* ii., *p.* 283; *id. Voy. Chall. Zool.*, iii., *p.* 106.

(*a, b*) Jamaica - - - - - - - - Exch.
(*c*) Loc. ? - - - - - - - - O.C.

Hab. St. Vincent and Cape Verde Islands; Ascension Island; West India Islands; Brazil; Bermudas, &c.

Echinometra viridis.

Echinometra viridis, *A. Agass.*, 1863, *Bull. M. C. Z.*, i., *p.* 22; *A. Agass.*, *Rev. Ech.*, i., *p.* 117, 284, *Syn.*; *id. Rev. Ech.*, iii., *p.* 435.

Echinometra plana, *A. Agass.*, 1863, *Bull. M. C. Z.*, i.

Echinometra michilini, *Lutken*, 1864 *(non Desml. nec A. Agass)*.

(*a*) Jamaica - - - - - - - - Exch.
(*b*) - - - - - - - - - - O.C.

Hab. West India Islands.

PARASALENIA.

Parasalenia, *A. Agass.*, 1863, *Bull. M. C. Z.*, i. ; *id. Rev. Ech.*, iii., *p.* 435.

Parasalenia gratiosa.

Parasalenia gratiosa, *A. Agass.*, 1863, *Bull. M.C.Z.*, i; *id. Rev. Ech.*, iii., *p.* 435.

(*a*) - - - - - - - - - - Pres.
(*b*)

STOMOPNEUSTES.

Stomopneustes, *Agass.*, 1841, *Monog. Scut. Int.; A. Agass.*, *Rev. Ech.*, iii., *p.* 436.

Stomopneustes variolaris.

Echinus variolaris, *Lamk.*, 1816, *An. sans Vert.*.

Stomopneustes variolaris, *Agass.*, 1841, *Monog. Scut. Int.*

(*a*) Mauritius, with worn down spines - - Bght.
(*b*) ,, ,, ,, half denuded ,,
(*c*) Young, long spines - - - - - ,,
(*d*) ,, ,, half denuded - - ,,
(*e*,*f*) Mauritius - - - - - - O.C.

Hab. Mauritius; New Hebrides; Java.

STOMOPNEUSTES VARIOLARIS, *Var.*

Stomopneustes atropurpureus, *T.-Woods*, *P. L. S.*, *N. S. W.*, 1880, *p.* 198.*

(*a*) North-East Australia - - - - - Pres.
(*b*) ,, ,, denuded - - - ,,
(*c*) Solomon Islands - - - - - - Coll.

Hab. Trinity Bay, Queensland; North-East Coast of Australia.

STRONGYLOCENTROTUS.

STRONGYLOCENTROTUS, *Brandt*, 1835, *Prod. desc. An.*; *A. Agass.*, *Rev. Ech.*, ii., *p* 276; *id. l. c.* iii., *p.* 438.

STRONGYLOCENTROTUS DRÖBACHIENSIS.

Echinus dröbachiensis, *Mull.*, 1776, *Zool. Dan. Prod.*

Strongylocentrotus dröbachiensis, *A. Agass.*, 1872, *Rev. Ech.*, *Pt.* i., *p.* 162; *id. Pt.* ii., *p.* 277; *id. Pt.* iii., *p.* 441; *id. Voy. Chall. Zool.*, iii., *p.* 107 (1881).

(*a*) East Port Maine - - - - - - Exch.
(*b*, *c*) Cape Cod - - - - - - ,,
(*d*) ,, - - - - - - ,,
(*e*) Labrador - - - - - - - ,,
(*f*) (Var. neglectus, Lamk.) North Europe - ,,
(*g*) British Columbia - - - - - ,,
(*h*) ,, ,, - - - - - ,,

Hab. North European and North Pacific Seas; North-East Coast of North America.

STRONGYLOCENTROTUS PURPURATUS.

Echinus purpuratus, *Stimps.*, 1857, *Crust. Ech. Pacif. Coast.*

Strongylocentrotus purpuratus, *A. Agass.*, 1872, *Rev. Ech.*, *Pt.* i., *p.* 165; *id. l. c. Pt.* iii., *p.* 449.

(*a*) California - - - - - - - Exch.
(*b*) ,, - - - - - - - ,,

Hab. West Coast of America.

* This appears to me to be only a variety of *S. variolaris*.

STRONGYLOCENTROTUS FRANCISCUS.

Toxocidaris franciscana, *A. Agass.*, *Bull. Mus. Comp. Zool.*, i., *p.* 22, 1863.

Toxocidaris globulosa, *A. Agass.*, 1863.

Strongylocentrotus franciscanus, *A. Agass.*, *Rev. Ech.*, i., *p.* 163, 1872; *id. l. c.* iii., *p.* 442.

(*a*, *b*) Chili - - - - - - - Exch.

Hab. Gulf of California; Chilian Coasts, S. Am.

STRONGYLOCENTROTUS LIVIDUS.

Echinus lividus, *Lamk.*, 1816, *Anim. sans Vert.*

Strongylocentrotus lividus, *Brandt*, 1835, *Prod. Desc. An.*; *A. Agass.*, *Rev. Ech.*, iii., *p* 446.

(*a*) Mediterranean.

(*b*) Beyrut, Med.

Hab. Mediterranean, Atlantic, Azores.

STRONGYLOCENTROTUS TUBERCULATUS.

Echinus tuberculatus, *Lamk.*, 1816, *Anim. sans Vert.*

Strongylocentrotus tuberculatus, *Brandt.*, 1835, *Prod. Desc. An.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 449.

(*a to c*) Lord Howe's Island - - - - Coll.

(*d*, *e*) „ „ denuded - - „

Hab. Lord Howe's Island; Australia; New Zealand; China and Japan Seas.

STRONGYLOCENTROTUS ERYTHROGRAMMUS.

Strongylocentrotus erythrogrammus, *Val.*, *Voy. Venus Zoopht.*, *pl.* vii., f. 1, 1845; *Jeff. Bell*, *Voy. Alert*, *p.* 121.

Strongylocentrotus eurythrogrammus, *A. Agass.*, 1872, *Rev. Ech.*, *Pt.* i., *p.* 163; *id. Pt.* iii., *p.* 441; *id. Voy. Chall.*, iii, *p.* 106.

(*a to f*, *&c.*) Port Jackson - - - - - Coll.

(*g to l*) „ „ denuded tests - - „

(*m*, *n*) Port Phillip - - - - - - Coll.
(*o*, *p*) Tasmania - - - - - - „
(*r*) Newcastle, large tests - - - - - Pres.

Hab. Australian Coasts; Tasmania; Japanese Seas; West Indian Ocean.*

SPHÆRECHINUS (*Strongylocentrotus*).

Sphærechinus, *Desor*, 1857, *Syn. des Ech. Foss.*

Strongylocentrotus, *A. Agass.*, *Rev. Ech.*, iii., *p.* 451; *id. Voy. Chall.*, iii., *p.* 106.

Sphærechinus granularis.

Echinus granularis, *Lamk.*, 1816, *Anim. sans Vert.*

Sphærechinus granularis, *A. Agass.*, 1863, *Bull. Mus. Comp. Zool.*, i.; *id. Rev. Ech.*, iii., *p.* 452; *id. Rep. Chall.*, iii., *p.* 106.

Echinus brevispinosus, *Risso*, 1826; *Val.*, *Anat. des Ech.*, *t.* 1, 1841.

Toxopneustes brevispinosus, *Agass. & Desor.*, 1846, *C. R. Ann. Sc. Nat.*, vi., *p.* 367.

(*a*, *b*) Bay of Naples - - - - - Bght.
(*c*) Mediterranean - - - - - - Exch.

Hab. Mediterranean and Coast of Africa.

Sphærechinus australiæ.

Sphærechinus Australiae, *A. Agass.*, 1872, *Bull. Mus. Comp. Zool.*, *Vol.* iii.; *id. Rev. Ech.*, iii., *p.* 451; *id. Voy. Chall.* iii., *p.* 106.

(*a*, *b*) South Australia.
(*c*, *d*) Ugi, Solomon Islands.

Hab. Solomon Islands; North and North-East Australia; New Zealand; Mauritius.

* Bell, Voy. Alert, p. 162.

PSEUDOBOLETIA *(Strongylocentrotus)*.

PSEUDOBOLETIA *Trosch.*, 1869, *Verhdl. d. Nat. Ver. f Rheinl. u. West.; A. Agass., Rev. Ech.*, iii., *p.* 454.

(Not represented.)

ECHINOSTREPHUS.

ECHINOSTREPHUS, *A. Agass.*, 1863, *Bull. M. C. Z.*, i.

ECHINOSTREPHUS MOLARE.

Echinometra setosa *Rumph., Amb. Rar. Kam.*, 1705.

Echinostrephus molare, *A. Agass.*, 1872, *Rev. Ech., Pt.* i., *p.* 119; *id. Pt.* iii., *p.* 457.

(*a*) Lord Howe's Island - - - - - Coll.

(*b*) „ „

Hab. Lord Howe's Island; Society Islands; Zanzibar; Natal.

ECHINIDÆ.

Family ECHINIDAE, *Agassiz*, 1846, *Cat. Rais. Ann. Sc. Nat.*, vi. *(emend).* (*A. Agass. Rev. Ech.*, iii, *p.* 458.)

TEMNOPLEURIDÆ.

Sub-Family TEMNOPLEURIDÆ, *Desor*, 1855, *Syn. Ech. Foss.*

TEMNOPLEURUS.

TEMNOPLEURUS, *Agass.*, 1841, *Int. Mon. Scut.; A. Agass., Voy. Chall.*, iii., *p.* 107; *Rev. Ech.*, iii., *p.* 460.

PLEURECHINUS, *Agass.*, 1841, *Mong. Scut.; A. Agass., Voy. Chall., Zool.*, iii., *p.* 108.*

TEMNOPLEURUS TOREUMATICUS.

Cidaris toreumatica, *Klein.*, 1734., *Nat. Disp. Ech.*

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*See Professor Duncan's Paper on the *Pleurechinus* of L. Agassiz, *Journal Linn. Soc., Zool.*, xvi., *No.* 94, *p.* 447 (1882).

Temnopleurus toreumaticus, *Agass.*, 1841, *Monog. Scut.*; *A. Agass.*, *Rev. Ech.*, iii, *p.* 463; *Bell, Voy. Alert*, *p.* 119.

(*a*) Port Denison - - - - - - Coll.
(*b*)

Hab. Eastern and Northern Australia; China, Japan Seas; East Indian Ocean.

PRIONECHINUS, *A. Agass.* MICROCYPHUS, *Agass.*
TEMNECHINUS, *Forbes* TRIGONOCIDARIS, *A. Agass.*

(Not represented.)

SALMACIS.

SALMACIS, *Agass.*, 1841, *Val. Anat. Gen. Ech.*

SALMACIS BICOLOR.

Salmacis bicolor, *Agass.*, 1841, *Val. Anat. Gen. Ech.*; *Agass. and Desor, Cat. Rais., Ann. Sc.* (3) vi., *p.* 359; *A. Agass.*, *Rev. Ech.*, iii., *p.* 471; *Bell, Voy. Alert*, *p.* 118; *id. P. Z. S.*, 1880, *p.* 248.

(*a*) Port Denison - - - - - - Coll.
(*b, c, d*) Cossack, West Australia - - - Bght.
(*f*) „ „ juv. - - „

Hab. Inter-Tropical Australia; Port Denison; Red Sea; Indian Ocean; Mozambique.

SALMACIS DUSSUMIERI.

Salmacis dussumieri, *Agass.*, 1846, *C. R., Ann. Sc. Nat., Vol.* vi., (3) *p.* 359; *A. Agass.*, *Rev. Ech.*, iii., *p.* 473; *Bell, Voy. Alert*, *p.* 171.

(*a b, c*) Port Jackson, dredged 4 to 7 fathoms, sand and shells - - - - - - Coll.
(*d*) Port Denison - - - - - - „
(*e*) Ugi, Solomon Islands - - - - - „

Hab. Port Jackson; East and North-Eastern Australia; China Seas; Solomon Islands.

Salmacis alexandri.

Salmacis globator, *form* A, *Bell, P. Z. S.*, 1880, *pp.* 431, 433, *pl.* xli., *figs.* 1 *to* 7.

Salmacis globator, *A. Agass., Rev. Ech.*, iii., *p.* 473 *(part)*.

Salmacis alexandri, *Bell, Voy. Alert, p.* 108.

(*a to f*)	Port Jackson	- - - - -	Coll.
(*g, h*)	,,	White-spined var. - -	,,
(*i, j, &c.*)	,,	Denuded tests - -	,,
*	,,	- - - - - -	,,

Hab. Port Jackson and East Coast of Australia.

Salmacis globator.

Salmacis globator, *A. Agass., Rev. Ech.*, iii., *p.* 473 *(part)*.

Salmacis globator, *form* B, *Bell, P. Z. S.*, 1880, *pp.* 431, 433, *pl.* xli., *figs.* 2, 3, 8.

(See infra.)

Salmacis rarispina.

Salmacis rarispina, *Agass.; Agass. & Desor*, 1846, *C. R., Ann. Sc. Nat.* (3), vi., *p.* 359; *A. Agass, Rev. Ech.*, iii., *p.* 457; *Bell, P. Z. S.*, 1880, *p.* 429; *A. Agass., Voy. Chall.*, iii., *p.* 113.

(*a to f*)	Port Denison	- - - - -	Coll.
(*g, h*)	Port Jackson	- - - - - -	,,

Hab. East and North-East Coast of Australia; Port Jackson, &c.; Philippine Islands; China; Siam.

Salmacis sulcata.

Salmacis sulcatus, *Agass.; Agass. & Desor*, 1846, *C. R., Ann. Sc. Nat.* (3), vi., *p.* 349; *A. Agass., Rev. Ech.*, iii., *p.* 476; *id. Voy. Chall.*, iii., *p.* 114; *Bell, P. Z. S.*, 1880, *p.* 430.

(*a to f*) Port Jackson, dredged 3 to 10 faths. - Coll.

Hab. Australian East Coast (Port Jackson, Port Denison, Port Molle), Philippine Islands; Mozambique; Red Sea.

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* Numerous forms varying in the shape of the test, and in the color of the spines, dredged together in Port Jackson, plentiful in September to January on sand and shells, 5 faths.

SALMACIS SP. ?

(*a*) Port Jackson, 3 to 10 faths. - - - Coll.

SALMACIS ? SP.

(*a*) A pyriform urchin, locality ? (See infra.)

MESPILIA.

MESPILIA, *Desor*, 1846, *Catal. Raisonné*, *Ann. Sc. Nat.*, vi., *p.* 357; *A. Agass. Rev. Ech.*, iii., *p.* 477.

MESPILIA GLOBULUS.

Mespilia globulus, *Agass.*; *Agass. & Desor, Cat. Rais. in Ann. des Sc. Nat.*, 1846 (3), *p.* 358, *pl.* xv., *fig.* 17; *A. Agass., Rev. Ech.*, iii., *p.* 477; *Bell, P. Z. S.*, 1880, *p.* 434.

(*a, b*) - - - - - - - - -

Hab. Samoa, New Hebrides Islands; New Caledonia; Celebes, New Guinea; North and East Coast of Australia.

AMBLYPNEUSTES.

AMBLYPNEUSTES, *Agass.*, 1841, *Int. Monog. Scut.*; *Bell, P. Z. S.*, 1880, *p.* 435; *A. Agass., Rev. Ech.*, iii., *p.* 478.

AMBLYPNEUSTES OVUM.

Echinus ovum, *Lamk.*, 1816, *Anim. sans Vert.*

Amblypneustes ovum, *Agass.*; *Agass. & Desor*, 1846, *C. R. Ann. Sc. Nat.*, vi. (3), *p.* 362; *A. Agass., Rev. Ech.*, iii., *p.* 480; *Bell, P. Z. S.*, 1880, *p.* 435.

(*a to f*) Port Jackson, 3 to 8 faths. - - - Coll.
(*g to l*) ,, denuded tests - - - ,,
(*m, &c.*) ,, immature and young - ,,
(*p*) Newcastle, large, denuded test - - - Pres.

Hab. Australian Seas, East Coasts.

AMBLYPNEUSTES GRISEUS.

Echinus griseus, *Blainv.*, 1825, *Dict. Sc. Nat. O.*

Amblypneustes griseus, *Agass.*; *Agass. & Desor*, *C. R. Ann. Sc. Nat.*, vi. (3), *p.* 362, 1841, *Int. Mon. Scut.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 480.

(*a*, *b*) Botany, denuded tests - - - - Coll.

Hab. Australia, East and South-East Coasts.

AMBLYPNEUSTES FORMOSUS.

Amblypneustes formosus, *Val.*, 1846, *Voy. Venus*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 479; *Bell*, *P. Z. S.*, 1880, *p.* 437.

(*a*) Queen's Beach, Botany, Cook's River - - Coll.

Hab. East and South-East Coasts of Australia.

HOLOPNEUSTES.

HOLOPNEUSTES, *Agass.*, 1841, *Anat. gen. Ech.*; *Agass. & Dessor*, *C. R. Ann. Sc. Nat.* (3) vi., *p.* 364.

HOLOPNEUSTES POROSISSIMUS.

Cidaris granulata *(Agass.)* 1841.

Holopneustes porosissimus, *Agass*; *Agass. & Dessor*, 1846, *R. C. An. Sc. Nat.* (3), vi., *p.* 364; *A. Agass.*, *Rev. Ech.*, iii., *p.* 484; *Bell*, *P. Z. S.*, 1880, *p.* 439.

(*a*) - - - - - - - - -

Hab. East and South Coasts of Australia.

HOLOPNEUSTES PURPURASCENS.

Amblypneustes purpurascens, *Lütk.*, 1872, *in A. Agass.*, *Bull. Mus. Comp. Zool.*, iii.; *id. Rev. Ech.*, iii., *p.* 485.

Holopneustes purpurascens, *A. Agass.*, 1872, *Bull. M. C. Z.*, iii.; *A. Agass.*, *Voy. Chall.*, iii., *p.* 114.

(*a*) Port Jackson - - - - - - Coll.

Hab. East Coast of Australia, 5 to 15 faths.

TRIPLECHINIDÆ.

Sub-Family TRIPLECHINIDÆ, *A. Agass.*, 1872, *Rev. Ech.*, ii. ; *id. l. c.* iii., *p.* 487 ; *id. Voy. Chall.*, iii., *p.* 114.

PHYMOSOMA.

PHYMOSOMA, *Haime*, 1853, *D'Arch. et Haime, An. foss. Inde.*

(Not represented.)

HEMIPEDINA.

HEMIPEDINA, *Wright*, 1855, *Brit. Ool. Ech. ; A. Agass., Rev. Ech.*, ii., *p.* 291 ; *id. l. c.* iii., *p.* 488.

(Not represented.)

ECHINUS.

ECHINUS, *Rondel.*, 1554, *De Piscib. (Linn.) (emend.) ; A. Agass., Rev. Ech.*, ii., *p.* 293 ; *id. l. c.* iii., *p.* 489 ; *id. Voy. Chall.*, iii., *p.* 114 ; *Agass. & Dessor, C. R. An. Sc. Nat.*, vi. (3), *p.* 364.

ECHINUS ESCULENTUS.

Echinus subglobosus, *Linn.*, 1745, *Fauna Suec.*

Echinus esculentus, *Linn.*, 1758, *Syst. Nat. ; A. Agass., Rev. Ech.*, iii., *p.* 491.

Echinus sphaera, *Müll.*, 1776, *Prod. Zool. Dan.*, *p.* 235.

(*a*) German Sea Coast - - - - - Exch.
(*b*, *c*, *d*) Norway, denuded tests - - - „

Hab. English Channel ; Norway, &c.

ECHINUS MELO.

Echinus melo, *Lamk.*, 1816, *Anim. sans Vert. ; A. Agass., Rev. Ech.*, iii., *p.* 493 ; *Agass. & Dessor, C. R. An. Sc. Nat.*, vi. (3), *p.* 365.

(*a*) Mediterranean - - - - - - Exch.
(*b*) „ - - - - - - - „

Hab. Mediterranean.

Echinus magellanicus.

Echinus magellanicus, *Phill.*, 1857, *Wieg. Arch.*, i.

(*a*) Dunedin, New Zealand - - - - Exch.
(*b*) Stewart's Island, N.Z. - - - - „

Hab. Patagonia; Chili; New Zealand; Australia?

Echinus angulosus.

Cidaris angulosa, *Leske*, 1778, *Kl. Add.*

Echinus angulosus, *A. Agass.*, 1872, *Rev. Ech.* i., *p.* 122; *id.* iii., *p.* 489; *Bell*, *Voy. Alert*, *p.* 121 (1884).

(*a*) Stewart's Island, N.Z. - - - - Exch.
(*b*) Cape Campbell, N.Z. - - - - - „

Echinus darnleyensis.

Echinus darnleyensis, *J. E. Tenison-Woods*, *Proc. Linn. Soc., N. S. W.*, ii., *p.* 165; *Bell*, *Voy. Alert* (1884), *p.* 121.

(*a*) Type of the species, Darnley Island, S. E. Coast of New Guinea - - - - Pres.
(*b*, *c*, *d*) Darnley Island, Voy. of the "Chevert" „

Hab. Torres Straits (Thursday, Prince of Wales and Darnley Islands,) and S.E. Coast of New Guinea.

Echinus microtuberculatus.

Echinus microtuberculatus, *Blainv.*, 1825, *Dict. Sc. N.*, xxxvii., *p.* 88; *Agass. & Dessor*, *C. R. An. Sc. Nat.*, vi. (3), *p.* 368; *A. Agass.*, *Rev. Ech.*, i., *p.* 124; *id. l. c.* iii., *p.* 494.

Echinus parvituberculatus, *Blainv.*, 1834, *Man. d' actin.*, *p.* 228.

(*a*) Dalmatia, Adriatic - - - - - Exch.

Hab. Mediterranean; Cape Verde Islands.

TOXOPNEUSTES.

Toxopneustes, *Agass.*, 1841, *Int. Mon. Scut.*; *A. Agass.*, *Rev. Ech.*, ii., *p* 496; *Voy. Chall.*, iii., *p.* 117.

Toxopneustes variegatus.

Echinus variegatus, *Lamk.*, 1816, *Anim. sans Vert.*

Toxopneustes variegatus, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 168; *id. l. c.* iii., *p.* 500.

(*a*) Bahia - - - - - - - - - Exch.
(*b*) Florida - - - - - - - - - „

Hab. West Indies; Bermudas; South Carolina; Gulf of Florida; Brazil.

Toxopneustes pileolus.

Echinus pileolus, *Lamk.*, 1816, *Anim. sans Vert.*

Toxopneustes pileolus, *Agass.*, 1841, *Int. Monog. Scut.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 497.

(*a*, *b*, *c*) Mauritius - - - - - - Pres.
(*d*) „ denuded test - - - „

Toxopneustes lividus.

See Strongylocentrotus lividus.

TRIPNEUSTES.

Tripneustes, *Agass.*, 1841, *p.* viii., *in Val. Anat. gen. Echinus*; *Bell, P. Z. S.*, 1879, *p.* 657.

Hipponoë, *Gray*, 1855, *P. Z. S.*, *p.* 36; *A. Agass.*, *Rev. Ech.*, iii, *p.* 500.

Tripneustes angulosus.

Cidaris variegata, *Leske*, 1778, *Kl. Add.*

Hipponoë variegata, *A. Agass.*, *Rev. Ech.*, i., *p.* 135; *id.* iii., *p.* 501.

Tripneustes angulosus, *Leske*; *Bell, P. Z. S.*, 1879, *pp.* 657, 661; *id. Voy. Alert*, *p.* 121 (1884).

(*a to d*) Lord Howe's Island - - - - Coll.
(*e*, *f*) „ „ „ (showing anal and actinal systems) - - - - - „

Hab. Mauritius; Red Sea; N. S. Wales Coast; Port Jackson; Lord Howe's Island.

Tripneustes esculentus.

Tripneustes esculentus, *Leske*, 1778, *Kl. Add.*

Cidaris variegata, *Leske*, 1778, *Kl. Add.* (*See Bell*, *P. Z. S.*, 1879, *pp.* 655, 662.)

(*a*) Mauritius - - - - - - - Exch.
(*b*) „ - - - - - - - Bght.
(*c*) „ denuded - - - - - „

Hab. Forida; Surinam; Mauritius; West Indies.

EVECHINUS (*Hipponoë*).

Evechinus, *Verrill*, 1871, *Notes on Radiata; A. Agass.*, *Rev. Ech.*, iii, 502.

Evechinus chloroticus.

Echinus chloroticus, *Val.*, 1846, *Voy. Venus.*

Evechinus chloroticus, *Verrill*, 1871, *Notes on Radiata; A. Agass.*, *Rev. Ech.*, iii., *p.* 502.

(*a*, *b*, *c*) Dunedin, New Zealand - - - Exch.
(*d*, *e*) Cape Campbell „ - - - „

Hab. Coasts of New Zealand.

Evechinus australiæ.

Evechinus australiæ, *Tenison-Woods*, *Proc. Linn. Soc. of N.S.W.*, ii., *p.* 167.

(*a*, *b*, *c*) Port Jackson.* Types of the species - Pres.

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* These specimens were obtained on a small sea beach about three miles north of Port Jackson Heads.

CLYPEASTRIDA.

Clypeastrida, *A. Agass.*, *Voy. Chall.*, iii., *p.* 118.

Sub-Order Clypeastridæ, *Agass.*, 1836, *Prod. Mon. Rad.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 504.

EUCLYPEASRIDÆ.

Family Euclypeastridæ, *Hæckel*, 1866, *Generelle Morphologie*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 505; *Voy. Chall.*, iii., *p.* 118.

FIBULARINA.

Sub-Family Fibularina, *Gray*, 1855, *Cat. Rec. Ech. (emend.)*, *p.* 65; *A. Agass.*, *Rev. Ech.*, iii., *p.* 505; *id. Voy. Chall.*, iii., *p.* 118.

ECHINOCYAMUS.

Echinocyamus, *Van Phels.*, 1774; *Agass. & Desor*, *C. R. An. Sc. Nat.*, vii. (3), *p.* 140.

Echinocyamus pusillus.

Spatagus pusillus, *Müll.*, 1776, *Prod. Zool. Dan.*

Echinocyamus pusillus, *Gray*, 1825, *Ann. Phil.*, *p.* 6; *A. Agass.*, *Rev. Ech.*, ii., *p.* 304; *id. l. c.* iii., *p.* 505; *id. Voy. Chall.*, iii., *p.* 118.

(*a*)

Hab. English Channel and Norway; Azores; Mediterranean; Florida.

? Echinocyamus sp. nov.

(*a*) Port Stephens, 25 to 35 faths. - - - Coll.

FIBULARIA.

FIBULARIA, *Lamk.*, *An. sans Vert.*, 1816; *Agass. & Desor*, *C. R. An. Sc. Nat.*, vii. (3), *p.* 142; *Gray*, *Cat. Rec. Ech*, 1855, *pp.* 3, 28.

FIBULARIA AUSTRALIS.

Fibularia australis, *Desml.*, 1837, *Tabl. Syn*, 240; *A. Agass.*, *Rev. Ech.*, iii., *p.* 506; *id. Voy. Chall.*, iii., *p.* 119; *Agass. & Desor*, *C. R. An. Sc. Nat.* vii. (3), *p.* 142.

(*a*) Port Jackson, 7 faths. - - - - - Coll.

(*b*) „ „ - - - - - - „

Hab. East Coast of Australia, 3 to 40 faths. (off Port Stephens and Port Jackson Heads); Japan; Sandwich Islands.

FIBULARIA OVULUM.

Echinus minutus, *Pall.*, 1774, *Spic. Zool*, ix., *pl.* 1, *f.* 3a.

Fibularia ovulum, *Lamk.*, *Anim. sans Vert.*, *p.* 17; *Agass. & Desor*, *C. R. An. Sc. Nat.*, vii. (3), *p.* 142; *A. Agass.*, *Rev. Ech.*, iii., *p.* 507; *Gray*, *Cat. Rec. Ech.*, 1855, *p.* 30.

Echinocyamus ovulum, *Gray*, *Ann. Phil.*, 1825, *p.* 6.

(*a*) Mauritius - - - - - - - Exch.

(*b*) Port Jackson - - - - - - Coll.

Hab. Mauritius; Indian Ocean; Philippine Islands.

FIBULARIA VOLVA.

Fibularia volva, *Agass.*; *Agass. & Desor*, 1847, *C. R. An. Sc. Nat.*, vii. (3), *p.* 142; *A. Agass.*, *Rev. Ech.*, iii., *p.* 509; *id. Voy. Chall.*, iii., *p.* 119.

(*a*) Torres Straits, North Australia - - - Coll.

(*b*) - - - - - - - - - -

Hab. North Coast of Australia; Red Sea; Formosa.

FIBULARIA OBLONGA.

Fibularia oblonga, *Gray*, *Cat. Rec. Ech.*, *p.* 30.

(*a to* —) New Caledonia, dredged 5 to 10 faths. Pres.

(*d to* —) Port Stephens, 24 faths. - - - Coll.

ECHINANTHIDÆ.

Sub-Family ECHINANTHIDÆ, *A. Agass.*, 1872, *Rev. Ech.*, iii., *p.* 510; *id. l. c.*, ii., *p.* 306.

CLYPEASTER.

CLYPEASTER, *Lamk.*, 1816, *Anim. sans Vert. (Müll. emend.)*; *A. Agass.*, *Rev. Ech.*, ii., *p.* 306; *id. l. c.*, iii., *p.* 510; *id. Voy. Chall.*, iii., *p.* 119.

CLYPEASTER HUMILIS.

Echinanthus humile, *Leske*, 1778, *Kl. Add.*, *pl.* xix., *f.* A B.

Clypeaster humilis, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 100; *id. l. c.*, iii., *p.* 510; *id. Voy. Chall.*, iii., *p.* 119; *Bell*, *Voy. Alert*, *p.* 122.

(*a*, *b*, *c*) Port Denison (Gloucester Passage) 10 fths. Coll.

(*d*) „ „ „ „

Hab. North and North-East Coasts of Australia; Red Sea; New Caledonia; East India Islands.

ANOMALANTHUS.

ECHINANTHUS, *Tenison-Woods*, *Proc. Linn. Soc. of N.S.W.*, ii., *p.* 169.

ANOMALANTHUS, *Bell*, *P. Z. S.*, *Lond.*, 1884, *p.* 40, *pl.* ii.

ANOMALANTHUS TUMIDUS.

Echinanthus tumidus, *Tenison-Woods*, *Proc. Linn. Soc. of N.S.W.*, ii., *p.* 169.

Anomalanthus tumidus, *Bell*, *P. Z. S.*, *Lond.*, 1884, *p.* 40, *pl.* ii.

(*a*) Type of the genus and species; Australian Coast - - - - - - - O.C.

Hab. Australian Seas.

ECHINANTHUS.

ECHINANTHUS, *Breyn.*, 1732, *Schediasma*, *(emend.)*; *A. Agass.*, *Rev. Ech.*, ii., *p.* 310; *id. l. c.* ii., *p.* 514; *id. Voy. Chall.*, iii., *p.* 120.

ECHINANTHUS TESTUDINARIUS.

Echinanthus testudinarius, *Gray*, 1851, *P. Z. S.*, *Lond*, *p.* 35; *A. Agass.*, *Rev. Ech.*, iii., *p.* 514; *id. Voy. Chall.*, iii., *p.* 120.

(*a*, *b*, *c*) Port Jackson, 5 to 7 faths. - - - Coll.
(*d*) Port Denison - - - - - - - „

LAGANIDÆ.

Sub-Family LAGANIDÆ, *Des.*, 1857, *Synops*, *p.* 217 *(emend.)*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 516.

LAGANUM.

LAGANUM, *Klein*, 1734, *Nat. Disp. Ech. Laganum*, *Agass.* 1841.

ECHINODISCUS, *Leske*, 1778; ECHINUS, *Gmel.*, 1788.

CLYPEASTER, *Lamk.*, 1816; SCUTELLA, *Lamk.*, 1816.

LAGANUM, *A. Agass.*, *Rev. Ech.*, iii., *p.* 516; PERONELLA, *Gray*, 1855, *Cat. Rec. Ech.*

LAGANUM DEPRESSUM.

Laganum depressum, *Less.*, 1841, *in Agass. Mon. Scut.*, *p.* 110; *A. Agass.*, *Rev. Ech.*, iii., *p.* 518; *id. l. c.*, i., *p.* 138.

(*a*) Samoa - - - - - - - Exch.

Hab. Solomon Islands; North and North-East Australia; Torres Straits; Islands of the Pacific Ocean, between the Tropics; Mauritius; Philippine and Fiji Islands, &c.

LAGANUM (*Peronella*) DECAGONALE.

Laganum decagonale, *Bell*, *Voy. Alert*, *pp.* 122, 171; *id. Ann. and Mag. Nat. Hist.* (5), xi., *p.* 130.

Peronella decagonalis, *A. Agass.*, *Rev. Ech.*, iii., *p.* 520; *id. l. c.*, i., *p.* 148; *Bell*, *Proc. Linn. Soc.*, *N.S.W.*, 1884, ix., *p.* 502.

(*a to g*) Port Denison, 3 to 20 fathoms - - Coll.
(*h to k*) West Australia - - - - - Bght.
(*l to n*) New Caledonia - - - - - Pres.

Hab. Fiji Islands; East and North Coasts of Australia; New Caledonia.

LAGANUM (*Peronella*) PERONII.

Laganum Peronii, *Agass.*, 1841, *Int Mon. Scut.*, *p.* 123, *pl.* xxii.; *Bell*, *Voy. Alert*, *p.* 171; *id. Proc. Linn. Soc.*, *N.S.W.*, (1884), ix, *p.p.* 503, 505–6.

Peronella peronii, *Gray*, 1855, *Cat. Rec. Ech.*, *p.* 13; *A. Agass.*, *Rev. Ech.*, iii., *p.* 522; *id. Voy. Chall.*, iii., *p.* 121.

(*a to f*) Port Jackson, 5 to 10 fathoms, sand and shells, sandy mud - - - - Coll.
(*g to j*) Port Jackson, denuded tests - - - ,,
(*k to* —) Broughton Islands, off Port Stephens, 25 to 35 fathoms - - - - ,,

Hab. Tasmania; Eastern and Northern Coasts of Australia; Philippine Islands; off Port Jackson, 35 fathoms, "Challenger."

LAGANUM (*Peronella*) SP. NOV. ?

(*a to f*) Broughton Islands, 35 fathoms - - Coll.
(Perhaps young of L. peronii, 0·3 to 0·5 inch.)

Hab. East Coast of Australia; Port Stephens.

SCUTELLIDÆ.

Family SCUTELLIDAE, *Agass.*, 1841, *Mon. Scut.*, *(emend).*

ECHINARACHNIUS *(Scutella).*

ECHINARACHNIUS, *Van Phels.*, *Agass. & Desor*, *C. R. Ech. Ann. Sc. Nat.*, vii. (3), *p.* 133 (1847); *A. Agass.*, *Rev. Ech.*, ii., *p* 315; *id. l. c.* iii., *p.* 524.

ECHINARACHNIUS (*Scutella*) PARMA.

Scutella parma, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 11.

Echinarachnius parma, *Gray*, 1825, *Ann. Phil.*, *p.* 6; *A. Agass.*, *Rev. Ech.*, ii., *p.* 316; *id. l. c.* iii., *p.* 528.

(*a to i*) Vineyard, Mass. - - - - - Exch.
(*j*, *k*) Nantucket, N. A. - - - - - ,,

Hab. North America; Labrador; Vancouver Island, &c.; Australia. (?)

ECHINARACHNIUS (*Scutella*) EXCENTRICUS.

Scutella excentrica, *Esch.*, 1829, *Zool. Atl.*, *pl.* xx., *f.* 2.

Echinarachnius excentricus, *Val.*, 1846, *Voy. Venus*, *pl.* x ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 524.

(*a*, *b*) "Marro," California - - - - Exch.

Hab. California ; Kamschatka, &c.

ARACHNOIDES.

ARACHNOIDES, *Klein*, 1734, *Nat. Disp. Ech. ; Agass. & Desor*, *C. R. Ech. Ann. Sc. Nat.*, 1847, vii. (3), *p.* 134.

ARACHNOIDES PLACENTA.

Echinus placenta, *Linn.*, 1758, *Syst. Nat.*

Arachnoides placenta, *Agass.*, 1841, *Mon. Scut.*, *p.* 94, *tab.* 21, *fig.* 35–42 ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 530.

Echinarachnius Zelandiæ, *Gray*, 1845, *Dieffenb. Voy.*, ii., *p.* 265.

Arachnoides Zelandiæ, *Gray*, 1855, *Cat. Rec. Ech.*, *p.* 14, *pl.* ii., *f.* 2.

(*a to f*, *&c.*) Port Denison, between tides on sand - Coll.
(*g*) California - - - - - - - Exch.
(*h*) Sumner, New Zealand - - - - „

Hab. North-East and North Australia ; Port Denison ; Hinchenbrook Channel ; East India Islands ; Burmah ; New Zealand.

ECHINODISCUS.

ECHINODISCUS, *Breyn.*, 1732, *De Echin. Schedias. (Leske, emend) ; A. Agass.*, *Rev. Ech.*, i., *p.* 112 ; *id. l. c.* iii., *p.* 531 ; *Voy. Chall.*, iii., *p.* 121.

ECHINODISCUS BIFORIS.

Echinodiscus bisperforatus, *Leske*, 1778, *Kl. Add.*, *p.* 132, *pl.* xxi., *f.* A, B.

Echinodiscus biforis, *A. Agass.*, 1872, *Rev. Ech*, i., *p.* 113; *id. l. c.* iii., *p.* 532.

(*a*, *b*) North Carolina, America - - - - Exch.

Hab. Madagascar; Java; Mozambique.

ECHINODISCUS AURITUS.

Echinodiscus auritus, *Leske*, 1778, *Klein*, *Add.*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 531.

(*a*) West Australia - - - - - - Bght.

Hab. Zanzibar; Philippine Islands; West Australia.

ECHINODISCUS LÆVIS.

Mellita lævis, *Klein*, 1734, *Nat. Disp. Ech.*

Echinodiscus lævis, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 113; *id. l. c.* iii., *p.* 533.

(*a*, *b*) New Caledonia - - - - - Pres.

Hab. New Caledonia; Japan; East India Islands.

MELLITA.

MELLITA, *Klein*, 1734, *Nat. Disp. Ech. (pars.)*; *A. Agass*, *Rev. Ech.*, ii, *p.* 319; *id. l. c.* i., *p.* 140; *id. l. c.* iii., *p.* 334.

ECHINODISCUS, *Leske*, 1788, *Kl. Add. (pars.)*; ENCOPE, *Agass.*, 1841, *Monog. Scut. (pars.)*; ECHINOGLYCUS, *Van Phels.*, *Gray*, 1855, *Cat. Rec. Ech.*, *pp.* 19 *to* 26 *(pars.)*

MELLITA SEXFORIS.

Echinodiscus sexiesperforata, *Leske*, 1778.

Echinus hexaporus, *Gmel.*, 1788, *Linn. Syst. Nat.*, 3189.

Scutella sexforis, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 9.

Mellita sexforis *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 141; *id. l. c.* iii., *p.* 536; *id. l. c.* ii., *p.* 320; *id. Voy. Chall.*, iii., *p.* 121.

(*a to f*) Beaufort, North Carolina, America - Exch.

Hab. West Indies; Tropical America, E. C.; Bermudas; Florida.

Mellita testudinata.

Mellita testudinata, *Klein*, 1734; *Agass.*, 1841.

Echinus orbiculus, *Linn.*, 1758, *Syst. Nat. Ed.* x., *p.* 666.

Mellita testudinaria, *Gray*, 1851, *P. Z. S.*, *Loud.*, *p.* 36; *id. Cat. Rec. Ech.*, *p.* 22 (1855).

Mellita testudinata, *A. Agass.*, *Rev. Ech.*, ii., *p.* 322; *id. l. c.* i., *p.* 141; *id. l. c.* iii., *p.* 538.

(*a*) West Indies - - - - - - Exch.

Hab. North and South Carolina; Brazil; West India Islands.

MELLITA (*Astriclypeus*).

Astriclypeus, *Verrill*, 1867, *Notes on Radiata*, *p.* 311; *A. Agass.*, *Rev. Ech.*, i, *p.* 93; iii., *p.* 538.

(Not represented.)

ROTULA.

Rotula, *Klein*, 1734, *Nat. Disp. Ech.*; *Agass. & Desor*, *C. R. Ech.*, *Ann. Sc. Nat.*, vii. (3), *p.* 138 (1847); *Agass.*, 1841, *Mon. Scut.*; *A. Agass.*, *Rev. Ech.*, i, *p.* 154; *id.* iii., *p.* 540.

(Not represented.)

ENCOPE.

Encope, *Agass.*, 1840, *Cat. Syst. Etyp.*; *Agass. & Desor*, *C. R. Ech.*, *Ann. Sc. Nat.*, vii. (3), *p.* 137 (1847); *A. Agass.*, *Rev. Ech.*, ii., *p.* 324; *id.* iii., *p.* 544; *id. Voy. Chall.*, iii., *p.* 122; Echinoglycus, *Gray*, *Cat. Rec. Ech.*, 1855, *pp.* 24, 25.

Encope emarginata.

Echinodiscus emarginatus, *Leske*, 1778, *Klein*, *Add.*, *p.* 136.

Encope emarginata, *Agass.*, 1841, *Mon. Scut.*, *p.* 47, *tab.* 10; *A. Agass.*, *Rev. Ech.*, ii., *p.* 325; *id. l. c.* iii., *p.* 545.

(*a*) New Caledonia ? - - - - - Pres.

(*b*) Bahia - - - - - - - - - Exch.

Hab. Brazil; West Indies; Tropical America.

PETALOSTICHA.

Sub-Order Petalosticha, *Hæckel*, 1866, *Generelle Morphologie (emend)*.

CASSIDULIDÆ.

Family Cassidulidae, *Agass.*, 1847; *Agass. & Desor, Catal. Rais. Ech. Ann. Sc. Nat.*, vii. (3), *p.* 143; *A. Agass., Rev. Ech.*, iii., *p.* 549.

ECHINONIDÆ.

Sub-Family Echinonidæ, *Agass.*, 1847, *C. R. Ann. Sc. Nat.*, vii. (3), *p.* 143; *A. Agass., Rev. Ech.*, iii., *p.* 550; *id.* ii., *p.* 332.

ECHINONËUS.

Echinoneus, *Van Phels.*, 1774, *Brief.*; *Agass. & Desor, C. R. Ech., Ann. Sc. Nat.*, vii. (3), *p.* 143 (1847); *A. Agass., Rev. Ech.*, ii., *p.* 332; iii., *p.* 550.

Echinonëus semilunaris.

Echinus semilunaris, *Gmel.*, 1788, *Linn. Syst. Nat.*

Echinoneus semilunaris, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 19; *A. Agass., Rev. Ech.*, i., *p.* 118; ii., *p.* 333; iii., *p.* 551.

(*a*, *b*) Loc. ? - - - - - - - O.C.

Hab. West Indies; Florida.

Echinonëus cyclostomus.

Echinonëus cyclostomus, *Leske*, 1778, *Kl. Add.*, *p.* 173; *A. Agass., Rev. Ech.*, i., *p.* 118; iii., *p.* 550.

(*a*, *b*) Mauritius.

Hab. Inter-Tropical Australia; Prince of Wales Channel (Voy. "Alert"); Kingsmills Islands; Zanzibar.

NUCLEOLIDÆ.

Sub-Family NUCLEOLIDÆ, *Agass. & Desor* (1847), *C. R. Ech.*, *Ann. Sc. Nat.*, vii., *p.* 153 ; *A. Agass., Rev. Ech.*, iii., *p.* 551.

NEOLAMPAS.

NEOLAMPAS, *A. Agass.*, 1869, *Bull. M. C. Z.*, i. ; *id. Rev. Ech.*, iii., *p.* 551 ; *id.* ii., *p.* 340.

(Not represented.)

RHYNCHOPYGUS.

RHYNCHOPYGUS, *D'Orbig.*, 1855, *Pal. Franç.*, vi. ; *A. Agass.*, *Rev. Ech.*, ii, *p.* 342 ; iii., *p.* 553.

RHYNCHOPYGUS PACIFICUS.

Pygorhynchus pacificus, *Agass.*, 1863, *Bull. M. C. Z.*, i., *p.* 27.
Rhynchopygus pacificus, *A. Agass., Rev. Ech.*, i., *p.* 153 ; *id. l. c.* iii., *p.* 554.

(*a*) Acapulco, Peru - - - - - - Exch.

Hab. Galapagos Islands ; Panama ; California ; Peru.

ECHINOBRISSUS.

ECHINOBRISSUS, *Breyn.*, 1732, *Schediasma de Echin. (pars.) ; A. Agass., Rev. Ech.*, iii., *p.* 555.

ECHINOBRISSUS RECENS.

Nucleolites recens, *Edw.*, 1836, *Cuv. Règn. Anim. Ed. Ill.*
Echinobrissus recens, *D'Orb.*, 1854, *Rev. Mag. Zool.*, *p.* 24 ; *A. Agass., Rev. Ech.*, iii., *p.* 556.

(*a*) - - - - - - - - - - Exch.

Hab. New Zealand, Madagascar.

NUCLEOLITES *(Echinobrissus)*.

NUCLEOLITES, *Lamk.*, 1801, *Anim. sans Vert. (pars.) ; A. Agass., Rev. Ech.*, iii., *p.* 557 ; *Agass. & Desor, C. R. Ech., Ann. Sc. Nat.*, vii. (3), *p.* 153.

(Not represented.)

ANOCHANUS *(Echinobrissus)*.

ANOCHANUS, *Grube*, 1868, *Monatsb. Akad. Berlin, March.*, *p.* 178.

(Not represented.)

SPATANGIDÆ.

Family SPATANGIDÆ, *Agass.*, 1836, *Prod. Mon. Rad. (emend.)*; *A. Agass.*, *Rev. Ech.*, iii., *p.* 561; *Gray*, *Cat. Rec. Ech.*, 1855, *pp.* 38–9.

ANANCHYTIDÆ.

Sub-Family ANANCHYTIDÆ, *Alb. Gras*, 1848, *Ech. foss. Isère*; *A. Agass.*, *Rev. Ech*, ii., *p.* 344; *id. l. c.* iii., *p.* 561.

POURTALESIA.

POURTALESIA, *A. Agass.*, 1869, *Bull. M. C. Z.*, i., *p.* 272; *A. Agass.*, *Rev. Ech.*, ii., *p.* 344; iii., *p.* 561; *S. Lovén. Acad. Sc. Sweden, June*, 1879–82.

(Not represented.)

HOMOLAMPUS.

HOMOLAMPUS, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 137; *id.* ii., *p.* 347; *id.* iii., *p.* 562.

(Not represented.)

PLATYBRISSUS.

PLATYBRISSUS, *Grube*, 1865; *A. Agass.*, *Rev. Ech.*, iii., *p.* 562.

(Not represented.)

SPATANGINA.

Sub-Family SPATANGINA, *Gray*, 1855, *Cat. Rec. Ech.*, *p.* 66; *A. Agass.*, *l. c.* iii., *p.* 564.

EUSPATANGINA, *A. Agass.*, *Rev. Ech.*, i., *p.* 219.

SPATANGUS.

SPATANGUS, *Klein*, 1734, *Nat. Disp. Ech.*; *Agass & Desor*, *C. R. Ech.*, *Ann. Sc. Nat.*, viii. (3), 1847, *p.* 6; *Gray* (1855), *Cat. Rec. Ech.*, *pp.* 47, 66.

SPATANGUS PURPUREUS.

Spatangus purpureus, *Müll.*, 1776, *Prod.*, ii., 2850, *t.* 6, *Zool. Dan.*

Spatangus purpureus, *Leske*, 1778, *Kl.*, *Add.*, *p.* 170; *A. Agass.*, *Rev. Ech.*, i., *p.* 218; *id.* iii., *p.* 565.

(*a*) Mediterranean - - - - - - Pres.

Hab. German Ocean, Mediterranean.

MARETIA.

MARETIA, *Gray*, 1855, *Cat. Rec. Ech.*, *p.* 48.; *A. Agass.*, *Rev. Ech.*, iii., *p.* 568.

MARETIA PLANULATA.

Spatangus ovatus, *Leske*, 1778, *Kl. Add.*

Spatangus planulatus, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 31.

Maretia planulata, *Gray*, *Cat. Rec. Ech.*, 1855, *p.* 48; *A. Agass.*, *Rev. Ech.*, iii., *p.* 570; *Bell*, *Voy. Alert*, *p.* 123.

(*a to c*) New Caledonia, 10 faths. - - - Pres.
(*d to f*) „ denuded - - - „
(*g*, *h*) Claremont Islands - - - - - Coll.
(*i*, *j*) Port Denison, 3 to 5 faths. - - - „
(*k*, *l*) Port Jackson, 3 to 6 „ - - - „
(*m*) Mauritius - - - - - - - Exch.

Hab. Mauritius; East and North Coasts of Australia (abundant); Kingsmills; New Caledonia.

EUPATAGUS.

EUPATAGUS, *Agass.*; *Agass. & Desor* (1847), *C. R. Ech.*, *Ann. Sc. Nat.* (3), viii., *p.* 9; *A. Agass.*, *Rev. Ech.*, i., *p* 128; *id.* iii., *p.* 572.

Eupatagus valenciennesii.

Eupatagus valenciennesii, *Agass. & Desor*, 1847, *C. R. Ech.*, *Ann. Sc. Nat.* (3), viii., *p.* 9 ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 573 ; *id.* i., *p.* 128.

(*a*, *b*) Port Jackson, North Head, 10 to 12 faths.
(*c to f*) „ „ „ Coll.
(*g*) Port Jackson, Sow and Pigs, with young under the primary spines.

Hab. East and North Coast of Australia, Port Jackson.

LOVENIA.

Lovenia, *Desor ; Agass. & Desor*, 1847, *C. R. Ech.*, *Ann. Sc. Nat.*, viii. (3), *p.* 10 ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 574 ; *Bell*, *Voy. Alert*, *p.* 123.

Lovenia elongata.

Spatangus elongatus, *Gray*, 1845, *Eyre Voyag.*, i.

Lovenia elongata, *Gray*, 1851, *Ann. & Mag. Nat. Hist.*, *p.* 131 ; *Bell*, *Voy. Alert*, *p.* 123.

(*a*, *b*) Port Jackson, off Sow & Pigs Reef, 7 faths. Coll.
(*c*)

Hab. Port Jackson ; Port Denison ; Torres Straits ; East and North Coast of Australia ; Red Sea ; Philippines.

BREYNIA.

Breynia, *Desor*, 1847 ; *Agass. & Desor*, *C. R. Ech.*, *Ann. Sc. Nat.* (3), viii., *p.* 12 ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 578.

Breynia australasiæ.

Spatangus australasiae, *Leach*, *Zool.*, *Misc.*, ii., *p.* 68, *t.* 82 (1815) ; *A. Agass.*, *Rev. Ech.*, iii., *p.* 578 ; *Bell*, *Voy. Alert*, *p.* 123.

(*a*, *b*) Lord Howe's Island, in sand, between tides Coll.
(*c*, *d*) Lord Howe's Island, test cut open - - „
(*e to g*) Lord Howe's Island, denuded tests - „

Hab. Lord Howe's Island (plentiful) ; East and North Coasts of Australia ; Torres Straits ; China ; Japan.

ECHINOCARDIUM.

Echinocardium, *Gray*, 1825, *Ann. Phil. (pars.)*; *A. Agass.*, *Rev. Ech.*, ii., *p.* 349; *id. l. c.* iii., *p.* 580; *Gray*, *Cat. Rec. Ech.*, 1855., *p.* 41.

Echinocardium australe.

Echinocardium australe, *Gray*, 1851, *Ann. & Mag. Nat. Hist.*, vii., *p.* 131; *A. Agass.*, *Rev. Ech.*, iii., *p.* 580.

(*a to f*) Port Jackson, 5 to 10 faths. - - - Coll.
(*g*, *h*) ,, denuded tests - - - ,,
(*i*) New Caledonia - - - - - - Pres.

Hab. East, North-East and North Coasts of Australia; Japan; S. E. Coast of New Guinea; East Indies; Cape of Good Hope; New Zealand; New Caledonia.

LESKIADÆ.

Sub-Family Leskiadæ, *Gray.*, *Cat. Rec. Ech.*, *p.* 63 (1855).

PALEOSTOMA.

Leskia, *Gray*, *Ann. & Mag. Nat. Hist.*, 1851 (2), vii., *No.* xxxviii., *p.* 134; *id. Cat. Rec. Ech.*, *p.* 63 (1855).

Paleostoma *Lovén*, 1867, *Vetensk. Ak. Förhdl.*

(Not represented.)

BRISSINA.

Sub-Family Brissina, *Gray*, 1855, *Cat. Rec. Ech.*, *p.* 49; *A. Agass.*, *Rev. Ech.*, iii., *p.* 585.

HEMIASTER.

Hemiaster, *Desor*; *Agass. & Desor*, *C. R. Ech.*, *Ann. Sc. Nat.*, viii. (3), *p.* 16 (1847); *A. Agass.*, *Rev. Ech.*, iii., *p.* 585.

HEMIASTER APICATUS.

Hemiaster *(Rhynobrissus)* apicatus, *Tenison-Woods, P. L. S. of N. S. Wales*, 1880, iv., *p.* 283, *pl.* xiii.

Hemiaster apicatus, *F. Jeff. Bell, P. L. S. of N. S. Wales*, 1884, ix., *pp.* 503, 506; *id. Voy. Alert*, *p.* 171.

(*a*, *b*) Port Jackson, 7 to 10 faths., types - - Coll.

Hab. Port Jackson; Moreton Bay; East Coast of Australia.

TRIPYLUS (*Hemiaster*).

TRIPYLUS, *Phil.*, 1846, *Erichs. Archiv.*, *p.* 347; *A. Agass.*, *Rev. Ech.*, iii., *p.* 588.

(Not represented.)

RHYNOBRISSUS (*Hemiaster*).

RHYNOBRISSUS, *A. Agass.*, 1872, *Bull. M. C. Z.*, iii.; *id. Rev. Ech.*, iii., *p.* 590.

(Not represented.)

BRISSOPSIS *(Hemiaster)*.

BRISSOPSIS, *Agass.*, 1840, *Cat. Syst. Etyp.*, *p.* 16; *A. Agass.*, *Rev. Ech.*, ii., *p.* 354; *id. l. c.* iii., *p.* 593.

(Not represented.)

AGASSIZIA.

AGASSIZIA, *Val.*, 1846, *Voy. Venus*; *A. Agass.*, *Rev. Ech.*, ii., *p.* 353; *id. l. c.* iii., *p.* 594.

(Not represented.)

BRISSUS.

BRISSUS, *Klein*, 1734, *Nat. Disp. Ech.*; *A. Agass.*, *Rev. Ech.*, ii., *p.* 356; *id. l. c.* iii., *p.* 596; *Gray, Cat. Rec. Ech.*, *p.* 51 (1855).

Brissus carinatus.

Spatangus carinatus, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 30.

Brissus carinatus, *Gray*, *Ann. Phil.*, 1825, *p.* 9; *id. Cat. Rec. Ech.*, *p.* 53 (1855); *A. Agass.*, *Rev. Ech.*, iii., *p.* 596.

(*a*, *b*) Port Jackson - - - - - - Coll.
(*c to e*) „ (?) denuded tests - - „
(*f*, *g*) Mauritius - - - - - - Exch.

Hab. East Coasts of Australia; Port Jackson; Sandwich, East India, Society, Philippine, and Mauritius Islands.

Var. B. compressus.

Brissus compressus, *Agass.*, *Prod.*, *p.* 326.

Spatangus compressus, *Lamk.*, *Hist.*, iii., *p.* 326; *Gray*, *Cat. Rec. Ech.*, *p.* 53 (1855).

(*a*) Pelew Islands - - - - - - Exch.

Hab. Pelew Islands; Mauritius.

Brissus unicolor.

Brissus unicolor, *Klein*, 1734, *Nat. Disp. Ech.*; *A. Agass.*, *Rev. Ech.*, ii, *p.* 598; *id. l. c.* i., *p.* 97.

Var. B. columbaris.

Spatangus columbaris, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 30.

Brissus columbarius, *Gray*, *Cat. Rec. Ech.*, *p.* 54.

(*a*, *b*) Jamaica - - - - - - Exch.

Var. B. scillæ.

Brissus scillæ, *Agass.*, 1836, *Prod.*, *p.* 185; *A. Agass.*, *Rev. Ech.*, i., *p.* 97; *Gray*, *Cat. Rec. Ech.*, *p.* 52 (1855).

(*a*) Mediterranean - - - - - - Exch.

Hab. Mediterranean.

METALIA (*Brissus*).

METALIA, *Gray*, *Cat. Rec. Ech.*, 1855, *p.* 51; *A. Agass.*, *Rev. Ech.*, i., *p.* 144; *id. l. c.* iii., *p.* 598; *id. l. c.* ii., *p.* 360.

METALIA STERNALIS.

Spatangus sternalis, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 31.

Metalia sternalis, *Gray*, *Cat. Rec. Ech.*, *p.* 51 (1855); *A. Agass.*, *Rev. Ech.*, i., *p.* 149; *id.* iii., *p.* 600.

(*a to c*) Mauritius - - - - - - O.C.
(*d*) Kingsmill Islands - - - - - Exch.

Hab. North and East Coasts of Australia; Mauritius; Sandwich Islands; East India Islands.

METALIA, SP.

(*a to c*) New Caledonia - - - - - Pres.
(*d*, *e*) „ denuded - - - - „

METALIA MACULOSA.

Echinus maculosus, *Gmel.*, 1788, *Linn. Syst. Nat.*, 3199.

Metalia maculosa, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 144; *id. l. c.* iii., *p.* 598.

(*a*) Mauritius - - - - - - - Bght.
(*b*, *c*) „ - - - - - - - Exch.

Hab. New Hebrides; Fiji Islands; Mauritius; Panama; North-East Coasts of Australia.

MEOMA (*Brissus*).

MEOMA, *Gray*, 1851, *Ann. & Mag. Nat Hist.*, vii. (2), *p.* 131.

MEOMA GRANDIS.

Meoma grandis, *Gray*, *Ann. & Mag. Nat. Hist.*, vii. (2), *p.* 132 (1851); *A. Agass.*, *Rev. Ech.*, iii., *p.* 603; *id. l. c.* i., *p.* 142.

(*a*) Mexico - - - - - - - Exch.

Hab. Gulf of California; Mexico.

Meoma ventricosa.

Spatangus ventricosus, *Lamk.*, 1816, *Anim. sans Vert.*, *p.* 29.

Meomia ventricosa, *Lütk.*, 1864, *Bid*, *p.* 120; *A. Agass.*, *Rev. Ech.*, iii., *p.* 603; *id. l. c.* i., *p.* 143.

(*a to c*) Bahamas - - - - - - Exch.

Hab. West Indies; Florida; Bahamas.

LINTHIA.

Desoria, *Gray*, 1851, *Ann. & Mag. Nat Hist.*; *id. Cat. Rec. Ech.* (1855), *p.* 58.

Linthia, *A. Agass.*, *Rev. Ech.*, iii., *p.* 604.

Linthia australis.

Desoria australis, *Gray*, *Ann. & Mag. Nat. Hist.*, vii. (2), *p.* 132.

Linthia australis, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 138; *id.* iii., *p.* 605.

(*a*) N. S. Wales Coast - - - - - O.C.

Hab. Tasmania; South-West, South, and East Coasts of Australia.

FAORINA *(Linthia)*.

Faorina, *Gray*, 1851, *Ann. & Mag. Nat. Hist.*, vii. (2), *p.* 132; *A. Agass.*, *Rev. Ech.*, iii., *p.* 607.

(Not represented.)

SCHIZASTER.

Schizaster, *Agass.*, 1836, *Prod.*; *Rev. Ech.*, ii., *p.* 363.; *id. l. c.* iii., *p.* 609.

Schizaster canaliferus.

Echinus lacunosus, *Linn.*, 1758, *Syst. Nat.*, *p.* 665.

Schizaster canaliferus, *Agass. & Desor*, *C. R. Ech.*, *Ann. Sc. Nat.*, viii. (3), *p.* 20 (1847).

Spatangus canaliferus, *Lamk.*

(*a*) - - - - - - - - - O.C.

Hab. Mediterranean.

Schizaster ventricosus.

Schizaster ventricosus, *Gray, Ann. & Mag. Nat. Hist.*, 1851 (2), vii., *p.* 133; *A. Agass., Rev. Ech.*, iii., *p.* 614.

(*a to c*) Port Jackson, 7 fathoms - - - Coll.
(*d*) ,, denuded - - - - ,,

Hab. Port Jackson; Port Denison; East and North-East Coast of Australia; Fiji Islands; Philippines.

MOIRA.

Moera, *Mich.*, 1855; Moira, *A. Agass.*, 1872, *Rev. Ech.*, i., *p.* 146; *id. l. c.* ii., *p.* 365; *id. l. c.* iii., *p.* 615.

(Not represented.)

NOTES ON SOME OF THE FOREGOING SPECIES

OF

AUSTRALIAN ECHINI.

PHYLLACANTHUS ANULIFERA.

This species, in its numerous varieties, is found to be very plentiful a little north of Brisbane, especially at Port Denison, where one of our Assistants, Mr. Alex. Morton, dredged it in quantity, in Glocester Passage and other parts adjacent to Bowen, in from 5 to 15 fathoms. It is a gregarious species, and exhibits much variation in the form and coloration of its spines. Many specimens in various stages of growth are exhibited.

PHYLLACANTHUS DUBIA.

It is very doubtful if this species is found on the South-East Coast, the specimens reported by Mr. Tenison-Woods from Tasmania and Bass' Straits, probably belong to the next species, *P. parvispina.* The specimens exhibited agree very well with the figures of *P. dubia* in A. Agassiz, Revision of the Echini, but not with those from Port Jackson (*P. parvispina*, T.-W.,) I believe *P. dubia* is only found on the northern parts of Australia, where, like the Port Jackson species, it frequents the rocky parts of the coasts and may be taken at low tides; it appears to be rare, *i.e.*, if the variety found in Port Jackson is to be considered to be a good species.

PHYLLACANTHUS PARVISPINA, *T.-W.*

P. tenuispina, Tenison-Woods, MSS.

This is the representative of *P. dubia* of the North Coast. Mr. Tenison-Woods has (Proc. Linn. Soc. of N.S.W., iv., *p.* 286) already pointed out the differences in those from Port Jackson, on which he has founded this new species. In *P. parvispina* the test is frequently wider than high, the distance *between the poles* being *less* than the *diameter*, this may be seen both in young and adult specimens, the spines are also proportionately shorter. It is strictly a litoral species, but can scarcely be called gregarious, frequenting during the summer months the rocks and reefs just below low-tide mark, retiring into deeper water

in the cold weather, but is seldom taken in the dredge. Its range North extends to Port Stephens, and Mr. Tenison-Woods says Moreton Bay; to the South, about Botany, Port Hacking, &c., it is abundant. I have not yet seen specimens from the South Coast or Tasmania, but it is more probable that this is the form found there, and not *P. dubia*.

PHYLLACANTHUS AUSTRALIS, *Sp. Nov.*

Of this hitherto unique and beautiful species I had only seen one specimen until quite recently, when I was fortunate enough to obtain from the trawl a second specimen, both were taken in about 6 fathoms, one near South Reef, the other under Shark Point, off a rocky bottom. At first sight it appears to resemble *P. baculosa*, but as will be readily seen from the Photographs, pl. i., the spines are flatter, fewer in number and stouter, the serations larger and the sculpture different, besides the large flattened primary spines are fluted and expanded at the tips.

GONIOCIDARIS TUBARIA.

This species is far from common in Port Jackson, a few have been swept from the rocky bottom near South Reef by the tangles of the dredge in 5 to 10 fathoms.

GONIOCIDARIS GERANIOIDES.

I have never met with this species in Port Jackson, but on the South Coast it is not rare; the Museum specimens were obtained in Port Phillip.

DIADEMA SETOSUM.

The southern limit in Australia of this species seems to be Wide Bay. Very young specimens, which eventually proved to belong to *Centrostephanus rodgersii*, were mistaken by Mr. Tenison-Woods and myself for the young of this species, and consequently *D. setosum* was reported from Port Jackson. On all the reefs north of Wide Bay, and at Ugi, Solomon Islands, our Collectors found this species plentiful. We have also received fine specimens from Mr. Smithhurst, collected in New Caledonia.

CENTROSTEPHANUS RODGERSII.

As mentioned before, the young of this species, with a test about 0·5 inch in diameter and with long slender spines measuring 1·5 to 2 inches or more in length, were mistaken for the young of *Diadema setosum*. In the immature stages they are even

more beautiful than in the adult, in some the primary spines often exceeding three times the length of the diameter of the tests, are of a rich purple or claret color beautifully ringed with white. The specimens alluded to were dredged off a sandy and rocky bottom in 8 fathoms of water, near the "Bottle and Glass" reef, in Port Jackson, and also off Shark Reef and Bradley's Head, many secreted in the folds and angles of large Sponges and Ascidians. The spines of the adults are of a rich uniform dark claret color, very brittle and hollow. These Urchins frequent the reefs and rocky shores just below low-tide mark, where they obtain their food; they progress with considerable rapidity for an Urchin when once disturbed, until they find a secure retreat in some crevice of the rocks, from whence it is difficult to remove them without destroying either the spines or test. I notice that the spines of those from the outside reefs, where they are exposed to the wash of the sea, are shorter and somewhat rounded at the tips, while those taken from the quiet waters inside have larger and more pointed spines. They are gregarious, many being found together, and frequent shallow waters. The broken spines are readily repaired, the new tips growing rapidly. It is this species, perhaps more than any other Urchin, that becomes food for the Port Jackson Shark, *Heterodontus galeatus;* the more common species *H. philipi* also occasionally feeds on them, the teeth of both species becoming stained of a beautiful pink or rose color. These Sharks frequent the reefs where the Echini abound, and it is quite probable many other species of Echinodermata supply them with food, their strong dorsal spines are frequently ground down to the surface of the fins, by their searching for food under the shelving rocks. The peculiar pigment or dye contained in the spines and within the test itself is worthy of investigation. I know of no other species on our coast which has this peculiarity. In cleaning the tests the fingers and nails become stained with the pigment, which is very difficult to remove.

ECHINOTHRIX CALAMARIS.

I have never seen any authentic specimen of this genus from the N. S. Wales coast.

HETEROCENTROTUS MAMMILLATUS.

ECHINOMETRA LACUNTA.

The former is a very common species throughout the Pacific Islands; the latter, although found so near at hand as Lord Howe's Island, has not, as far as I am aware, yet been obtained on the coast of N. S. Wales, although we have specimens from Port Denison, and I have heard of its being found as far south on the coast as Wide Bay, in Queensland.

STRONGYLOCENTROTUS TUBERCULATUS.

This fine Urchin, which attains a considerable size, is very common at Lord Howe's Island. I have not met with any from the mainland. The spines are long, strong, sharp, and solid, finely striated longitudinally; on the ambitus and below the shafts they are distinctly flattened, and in color of a uniform rich olive or olive brown, although finely striated they feel smooth and polished; the flattened spines are more numerous and distinct in the young than in the adult. I can find no description of the spines of this species in any work at my disposal. The test closely resembles that of *S. franciscanus*, but the porriferous zone is not so petaloid on the actinostome; the spines in spirit specimens are often of an olive-yellow color.

STRONGYLOCENTROTUS ERYTHROGRAMMUS.

This species is very plentiful in Port Jackson, and may be found between the tides at almost any time, it is also occasionally dredged in 10 to 20 fathoms. In color the spines vary from rich purple to pale brown or cream color. It seems to attain to a greater size to the South, especially in Tasmanian Waters The tests vary considerably in height, some being only one-third of their diameter. From the coast near Newcastle we have received some large specimens, measuring three and four inches across and 1·5 in height They are in habit gregarious, a dozen or more may be found clustered round one stone. They are seldom found on the sandy flats, and the few dredged there are always of small size; occasionally malformed tests are found.

SPHÆRECHINUS AUSTRALIÆ.

Taken on sandy bottoms in 5 to 10 fathoms, sometimes close to the shore, comparatively rare on the Australian Coast. Mr. Tenison-Woods states that it is found in Bass' Straits, King's Island, and Tasmania. Mr. Morton obtained specimens in the Solomon Islands.

TEMNOPLEURUS TOREUMATICUS.

Although this species has been obtained both during the voyages of the "Chevert" and "Alert," and also by our Assistant, Mr. Alex. Morton, on the Australian Coast, it is far from being common; a good series is still among the desiderata of the Australian Museum. It is found on sandy mud bottoms in from 5 to 20 fathoms.

MYCROCYPHUS ZIGZAG.

I have never seen this species from the Australian Coast, although Mr. Tenison-Woods appears to have been more fortunate, and reports it from Tasmania and Port Denison.

ECHINOSTREPHUS MOLARE.

I have not met with this species on the Australian Coast, but Mr. Morton, during a few days' stay at Lord Howe's Island, obtained a single specimen, which had worn the spines of the actinal surface short with burrowing in the rocks where it had formed a rounded cavity; the spines above the ambitus are of the usual length; it is apparently rare, as no other specimen has been obtained although searched for on several recent occasions.

SALMACIS DUSSUMIERI.

This beautiful and well marked species is occasionally found in Port Jackson, on a botton of sandy mud and shells, in 8 to 10 fathoms. It appears to be more plentiful further north in similar situations at Port Denison; the Museum possesses one very large specimen, the test being 3½ in. in diameter, and 1½ in. high, obtained in shallow water at the Solomon Islands. The flattened spines round the ambitus and actinostome are fluted and tinged with violet at the tip, the test and base of the spines pure white in some specimens, the spines longest on the ambitus, and radiating therefrom form a fringe round the margin of the test.

SALMACIS, Sp.

Pl. ii., figs. 1, 2, 3.

This is a very peculiar pyriform variety or species, of which the Museum possesses but one specimen, without any authentic locality.* The color of the spines above the ambitus, judging from a few sticking to the denuded test, is orange-red at the base, white or greenish-white towards the tips, secondary and milliary spines white, the bosses imperforate, milled and crenulate, mammilla often tinged with orange-red, at the actinostome there is only one row of primary tubercles with a row of secondaries on either side; between each plate a row of milliaries, towards the ambitus the secondaries enlarge and form a row of three or four primary tubercles across each plate, above the ambitus they become small again, until only one row of primary tubercles reach the anal system; the spines near the abactinal pole are orange red. On the plates of the ambulacral area there are only two primary rows of tubercles at the ambitus, and only one

* Said to have been trawled in 35 fathoms off Port Jackson.

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row at the actinal and abactinal poles, with an irregular arc of three pairs of pores to each plate, and a single pore at each angle of connection, a row of milliaries and a shallow marginal suture divide each plate in both areas. The anal system large, all the ocular plates external. This remarkable Urchin will be more fully described hereafter, my object at present is merely to call attention to some of the peculiarities exhibited in the test, although in the color of the spines it resembles an *Amblypneustes*, the sutures and pores show it to be closely allied to, if not a true *Salmacis;* there are no actinal cuts, but the auricles resemble those of *Salmacis*. For this species I propose the name of *Salmacis Woodsii*.

SALMACIS ALEXANDRI. *Bell.*

This very beautiful species abounds in Port Jackson, in one haul of the trawl in 5 to 10 fathoms no less than 80 specimens have been recently taken, varying in color and form in a remarkable degree. In some the test is conical, in others rounded and depressed with the actinal surface flattened, the sutures between the plates varying from shallow to deep grooves, which can be plainly seen before the tests are denuded of their spines, in others the actinal surface is swollen or rounded. The color of the spines varies from pure white with violet or rose tips to dull green, some of a rich violet, purple-rose color, or pink, tipped with white; frequently specimens all white with a tinge of rose color may be found. The tests vary considerably in height, some being *quite conical* others *flattened* and *depressed*, and many malformed individuals are obtained; the tests grow very rapidly; in the young the sutures and pores between the plates are very conspicuous, but become almost obliterated in very old individuals. The tests of the young of about two inches across bear a close resemblance to a half grown *Temnopleurus toreumaticus;* others with the base green or purple, the centres violet or brick-red, and the tips white, occasionally all these colors may be found blended, the test itself white, forming a pleasing contrast with the color of the spines, which however whether dry or in spirits soon lose their brilliancy; none of the spines in this species are ringed with the various colors as is the case with *S. bicolor* and *S. rarispinis*. The most common variety has the test white, the base of the primary spines green, the centres violet or purple, and the tips white.

SALMACIS RARISPINA.

Specimens dredged in Port Jackson along with *S. alexandri* (Bell) agree exactly with numerous specimens from Port Denison, and in a great degree with Bell's description and

figure of *S. globator*, in P. Z. S., 1880, pl. xli., fig. 2. We have a very large collection of *Temnopluridæ* in the Museum, some hundreds of specimens and several species, and I regret I am not in a position to go into the matter, for notwithstanding the labors of Professors Agassiz, Bell, and other recent writers, the whole family sadly wants revising; I trust that some of our friends who make the study of the Echini a speciality, will ere long take up this section,—we shall be happy to supply specimens of the Australian species.

SALMACIS GLOBATOR. *Agass.*

I have never been able to obtain a specimen which with any degree of certainty I could refer to this species. The description of Professor A. Agassiz, in the Revision of the Echini, iii., *p.* 473–4, will refer to specimens from Port Jackson, except in the remark that "*there are no sutural furrows on the actinal side.*" This all depends on the age of the specimen or the *variety* under consideration, for although there are many well marked varieties among the Port Jackson specimens, yet intermediate forms in all stages may be obtained. From an examination of some hundreds of specimens of all sizes, ages, colors, and forms, from Port Jackson, I feel convinced that the true *Salmacis globator* of Louis Agassiz (*Agass. & Desor, C. R., Ann. des Sc. Nat.*, ii. (3), *p.* 359) has yet to be found in Port Jackson, the species here so variable and plentiful has been very properly separated under the name of *S. alexandri* by Professor Jeffrey Bell.—See P. Z. S., 1880, *p.* 433. For the benefit of those who have not the opportunity of consulting the above-mentioned work, the original description is here transcribed:—"*S. globator, Agass.*—*Petite espèce très renflée. Pores angulaires très petits. Deux rangées de tubercules sur les aires ambulacraires et sur les inter-ambulacraires.*" Professor Bell, loc. cit., *p.* 432, suggests that "deux" is a misprint for "*douze,*" but even this will not set matters right, and I can only repeat that I have never yet seen *S. globator* from the N. S. Wales coast, nor have we at present any specimen in the Museum from N. S. Wales which will answer either to the original description of Agassiz, or to that given by Professor Bell, or to his fig. 2 on pl. xli. in the P. Z. S. (1880.)

MESPILIA GLOBULUS.

Of this species I have not yet seen a New South Wales specimen, but it appears to be not unfrequent on the South Coast, New Caledonia, and Pacific Islands.

AMBLYPNEUSTES OVUM.

This is the common Port Jackson species, and one of the most beautiful of all Urchins—the colors vary from rich deep orange to olive both of the test and spines; those from Port Jackson are of a uniform rich orange, the test varies considerably in form, some much higher than wide, others having the axial diameter less than the horizontal, and appear flattened; the size of the anal system and anal pores varies considerably, as also do the pits at the angles of the plates. I have over a hundred specimens from Port Jackson and Botany, and from several of the sea beaches along the coast, but can only find two distinct species among the whole. The form of the test cannot be taken as a specific difference in this genus.

AMBLYPNEUSTES GRISEUS.

This appears to me to be a doubtful species, or perhaps I have not yet met with an authentic specimen; nevertheless, those which I have determined to be of this species, agree as well as can be expected with Professor Agassiz's description. Several large specimens, 2·3 x 1·75 in., lately received from Tasmania show indications of sculptures like those of *A. formossus.*

AMBLYPNEUSTES FORMOSUS.

A very beautiful species, easily determined by the elegant sculpture on the coronal plates. The only specimen I have at present was found washed up on "Queen's Beach," in Botany Bay.

HOLOPNEUSTES POROSISSIMUS.

I have seen no authentic record of this species being found on the N. S. Wales Coast, although it is reported from the East and South Coasts of Australia; but I have recently obtained specimens from Cape Liptrap, spines greenish with the tips purple. *Holopneustes purpureseens* must be looked upon as a rare species if a good species at all. Three species—*H. inflatus*, *H. porosissimus*, and *H. purpureseens*—are somewhat doubtfully recognized by Agassiz, and without a large series of specimens it is almost impossible to distinguish these varieties; it is quite likely that they all belong to one species.

ECHINUS DARNLEYENSIS.

This species, described by the Rev. J. E. Tenison-Woods, was first found in tolerable numbers on the shores of Darnley Island, and other parts of Torres Straits. It appears to be closely allied to, if not identical, with *E. angulosus* of A. Agassiz.

TRIPNEUSTES ANGULOSUS.

This species is very plentiful on Lord Howe's Island, where it attains a great size, often 6 to 8 inches in diameter; the young forms are frequently depressed, some scarcely an inch in height are two inches in diameter. They are eaten both in the raw and cooked state by the inhabitants. Some large specimens have also been dredged in Jervis Bay, a few miles south of Port Jackson; those from Port Jackson itself seldom exceed $3\frac{1}{2}$ inches in diameter, and are usually white in color.

EVECHINUS AUSTRALIÆ.

Although dead tests are occasionally found thrown up on the sea beaches after heavy gales, this is a rare species on our coasts; recently we have dredged a few small specimens off the "Sow and Pigs" reef, in Port Jackson.

CLYPEASTRIDA.

Echinocyamus and Fibularia.

We have quite a large number of small Urchins, dredged in from 15 to 30 fathoms off Port Jackson Heads, and northward towards the Seal Rocks near Port Stephens, which, in the present state of the literature at my disposal, I am unable to identify; among them are undoubtedly several forms of the above-mentioned genera.

CLYPEASTER HUMILIS.

This fine species is very plentiful at Port Denison, and generally on the North-East Coast; it is found in from 3 to 10 fathoms on sandy bottoms.

ANOMALANTHUS TUMIDUS.

The genus name for this species was given to the type specimen of *Echinanthus tumidus* of Tenison-Woods by Professor J. Bell, in his paper on the subject in the P. Z. S., 1884, *p.* 40, pl. ii. It is a remarkable form, apparently allied to some fossil forms of the Oolite. It is to be regretted that no data as to locality or anything else was attached to the specimen, which was found in the old collection of the Museum. From the marks on the test it appears to have been speared with a flounder or flat-fish spear, still used by fishermen and amateurs in Port Jackson and Botany Bay, and was probably taken in the latter place, but we have no record as to the habitat of this single specimen.

ECHINANTHUS TESTUDINARIUS.

This cannot be considered a common species, it is occasionally taken with the trawl and dredge in Port Jackson, but usually singly. It is found in from 5 to 20 fathoms on sand, and seldom attains a greater longitudinal diameter than 5 inches; when alive the spines are of a greenish tint, but occasionally light brown.

LAGANUM DECAGONALE.

A very common species, found at low tides in about a foot or less of water on the sandy spits and beaches from Wide Bay northwards.

LAGANUM PERONII.

A species tolerbly plentiful in Port Jackson during the warm months on sandy bottoms in 5 to 10 fathoms; we have also dredged it in 35 fathoms off the coast, both adult and young, the immature specimens predominating. Those from the harbour of Port Jackson are usually of an olive-green tint, but vary to dull brown.

ARACHNOIDES PLACENTA.

This is one of the most common "cake" Urchins found north of Wide Bay. At the mouth of the Herbert River I found it in November, 1873, in immense numbers left by the tide on the sandy spits near the sea, making their way with tolerable rapidity towards the receding waves, and leaving a broad track behind them in the sand.

MARETIA PLANULATA.

We have recently beautifully marked specimens of this species, dredged by Mr. Smithhurst, of the "Dingadee," in 10 fathoms, near Freycenét Island, in New Caledonia; the rich maroon-brown markings contrast beautifully with the pearly whiteness of the test. It is plentifully dispersed over the whole of the East and North Coasts, and is particularly plentiful off Port Denison in 3 to 10 fathoms on sand; those from Port Jackson and the N. S. Wales coast generally, are uniformly white in color, without blotches, the primary spines sometimes exceed the length of the test.

EUPATAGUS VALENCIENNESII.

A rare species in Port Jackson, and usually found in 8 to 10 fathoms of water. It is the only species that I have met with in which the young are carried, until their spines are

developed, underneath the long primary spines of the adult. In one specimen 14 young were found, about a line in length, sheltered round the genital pores under the primary spines, which were laid down and closely compressed against the test and not easily movable, as in other individuals without young.

LOVENIA ELONGATA.

A rare species in Port Jackson; denuded tests are sometimes found thrown up during heavy gales on the Coast; it appears to be less rare on the South Coast.

BREYNIA AUSTRALASIÆ.

Very plentiful at Lord Howe's Island, where they are found burrowing to a depth of 5 or 6 inches in the sand. It has been seldom found in Port Jackson or on the adjacent Coast.

ECHINOCARDIUM AUSTRALE.

This Heart Urchin is fairly common in Port Jackson, being found at various depths from a few feet to 10 and 12 fathoms, also on the sea coast up to 35 fathoms. It is the only species I have met with in water which at certain seasons of the year must at least become brackish with the amount of fresh water which during heavy rains pours into the heads of the creeks entering Port Jackson. On more than one occasion, while dredging at the head of Middle Harbour, we have obtained numerous specimens, the dredge containing also Eucalyptus and Mellaleuca leaves, chips of wood, &c., brought down by the stream after heavy floods; the heads of these creeks are always more or less brackish, and fresh water fish abound in them on such occasions.

HEMIASTER APICATUS.

A rare species and only obtained on two or three occasions during the last five years. It is sometimes found thrown up by the sea on the outside beaches after gales, but seldom in good condition. The Museum specimens were taken in 7 to 10 fathoms near the North Head of Port Jackson.

BRISSUS CARINATUS.

Although universally dispersed over the shores of Eastern and Southern Australia, *Brissus carinatus* is by no means plentiful; in Port Jackson itself it is rare, found only on sandy flats covered with 6 to 10 fathoms of water,—a few dead tests may occasionally be found after heavy gales on the coast beaches.

LINTHIA AUSTRALIS.

I doubt if this species has ever been obtained in Port Jackson, most of the specimens so labelled in the old collection prove to be *Brissus carinatus*. The only specimen we have at present—a denuded test—was probably found on one of the adjacent sea-coast beaches. It is stated to be not rare on the coasts of South Australia, but as yet I have seen no specimens from that Colony.

SCHIZASTER VENTRICOSUS.

We have occasionally dredged this species near the Heads of Port Jackson in 6 to 8 fathoms, but at all times it is rare.

EXPLANATION OF PLATES.

PLATE I.—PHYLLACANTHUS AUSTRALIS, *Ramsay*.—Side view.

,, I*a*. ,, ,, ,, Abactinal end.

,, I*b*. ,, ,, ,, Actinal end.

(From the type.)

,, II.—SALMACIS WOODSII, *Ramsay*. 1. Actinal end. 2. Side.
3. Abactinal end.

(From the type.)

,, III.—GONIOCIDARIS TUBARIA, *Lamk*.

PHYLLACANTHUS AUSTRALIS, *Ramsay*.

Plate I.

PHYLLACANTHUS AUSTRALIS. *Ramsay.*

PHYLLACANTHUS AUSTRALIS, *Ramsay.*

Fig. 1.

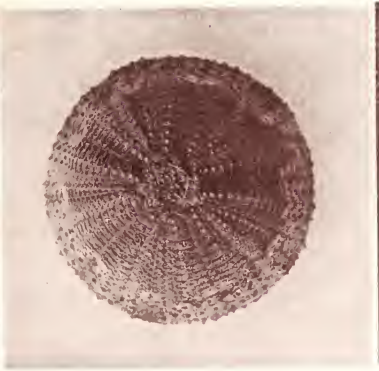
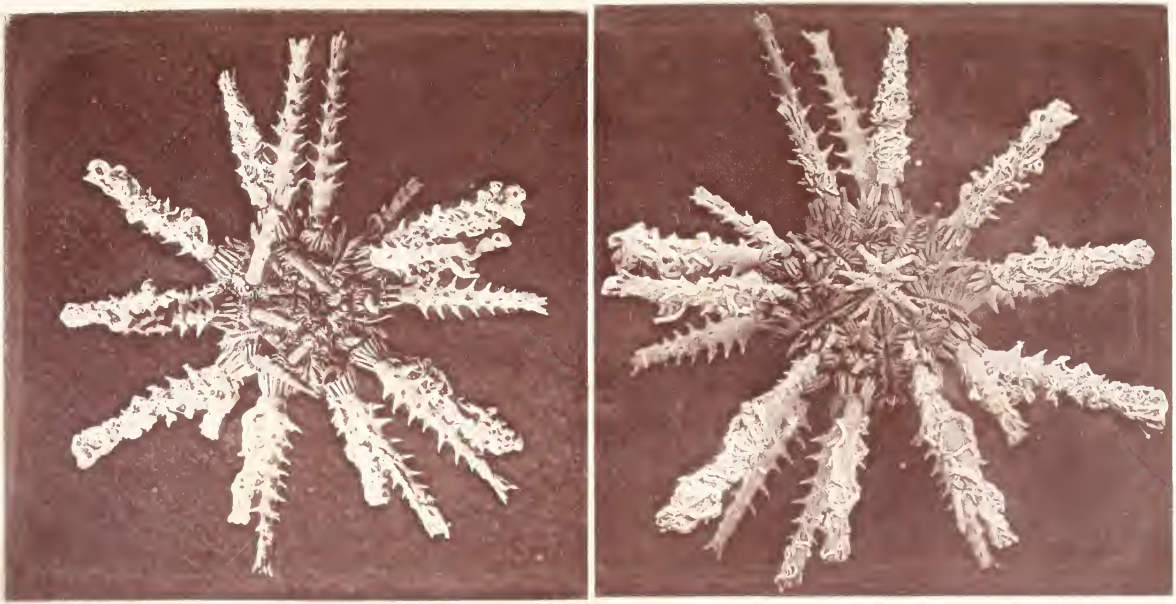


Fig. 3.

Fig. 2.

SALMACIS WOODSII. *Ramsay.*

Plate II.



GONIOCIDARIS TUBARIA. *Lamk.*